A STUDY OF THE RELATIONSHIP BETWEEN EDUCATIONAL OPPORTUNITY AND ECONOMIC WELL-BEING IN THE COUNTIES OF OKLAHOMA

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CHAPTER I

It has been an almost universally accepted part of the American tradition that education is good; that is, education contributes something which is desirable to the educatee and to the society which is represented by the educator. So deeply ingrained is this belief that one seldom finds a person who will take issue with it. When a point of contention is found, it is almost invariably concerned with which education will give rise to the greatest personal or societal return or perhaps the degree of responsibility for education which should be accepted by the individual, the family, the state, and the other segments of our society.

This belief in education as an inherent good and as a force for individual and social up-lifting is expressed by the National Education Association in the following statement:

> There is power in a waterfall, in a B-24, in an acorn. But there is a greater power in education which teaches man how to control the forces of nature and changes the thoughts and actions of man himself.
>
> To fail to utilize this power for creative good is the greatest folly an individual, a community, a state, or a nation can commit.[1]

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[1] Education--A Mighty Force (Washington, D.C., 1944), p. 2.

Similarly, Harold F. Clark writes:

> All nations want to be more prosperous. All want a higher income. Many things can be done to help raise the level of income of a country. Better machinery is most important; more efficient management is vital; more effective labor is necessary; wise use of natural resources is imperative; far more research is needed in many fields. In our modern industrial and technical economy it is necessary that both labor and management understand production and cooperate to increase output.
>
> Underlying all these, however, is the level of understanding and technical knowledge of all the people.[2]

This broad premise which serves as the very cornerstone of our educational philosophy was early accepted on the basis of faith and simple observation. However, in the nineteenth century, along with the general social-technical awakening known as the industrial revolution, a more inquiring attitude was developed toward many of the fundamental assumptions of a few decades earlier. Among the many questions raised were: Is education always good for society and for the individual educatee? Does the improvement and strengthening of our national economy necessarily involve an improved program of public education? What is the optimum amount for society to invest in education?

As a result of such questions, educational leaders found it necessary to look more carefully at the basic principles and structures of free public education. Horace Mann[3] wrote at length on the con-

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[2]Harold F. Clark, Education Steps Up Living Standards, The U. S. Chamber of Commerce (Washington, D. C., 1945), p. 3.

[3]Horace Mann, "The Capacity of the Common School System to Improve the Pecuniary Condition and Elevate the Intellectual, Moral and Religious Character of the Commonwealth," Annual Report on Education (Boston, 1848).

tribution of public education to the improvement of the individual and the society. Faith and general observation were replaced by planned experimental investigation as a basis for establishing the worth of education. Since 1900, some five hundred research studies have been conducted to demonstrate the socio-economic benefits derived by an individual from educational experiences. Outstanding among these were the studies of Lord[4] and Ellis[5] which demonstrated clearly the relationship that exists between personal economic status and level of educational attainment.

Many of these analyses proved to be of limited value because of one outstanding defect: They failed to utlize groups equated on the basis of factors other than that of educational attainment. Gorseline,[6] Watson,[7] and others pointed out that many of the experimental results could be explained on the basis that college graduates were a select group. They had superior mental ability, better family and business connections, better opportunity to marry well, and more money initially. In order to secure results which are clearly without prejudice, new experiments must be designed in which these factors are eliminated. Such research on fully equated groups has not as yet been conducted.

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[4]Everett W. Lord, Relation of Education and Income, Alpha Kappa Psi Fraternity (Indianapolis, 1928).

[5]A. C. Ellis, "The Money Value of Education," U. S. Bureau of Education Bulletin (Washington, 1917).

[6]D. E. Gorseline, The Effect of Schooling Upon Income, Graduate Council of Indiana University (Bloomington, 1932).

[7]Walter Watson, Some Relationships Between Education and Income (New York, 1940).

Even more important to educational leaders is a clear understanding of the relationship between educational opportunity and the general welfare of the society as a whole. How much education does a society need? What is the optimum level beyond which money expended for education does not yield sufficient return? Obviously education should be increased as long as the augmented output of goods or services more than covers the cost of the increased training. Have we approached this point as yet? Such pioneer work as the Sloan Foundation Experiments[8] or the studies of Harold F. Clark gave some of the more reliable answers to these questions. The Sloan Foundation experiments indicated by means of controlled experiments that increased education could improve the clothing, housing, and food supply of a community. Clark has summarized one of his earlier studies:

> There is one thing, however, that you will always find in any country with a high income. You will find that the people have a high level of education and great technical skill. It might be argued that countries having a large income use this income to educate their people and give them technical training, and there is undoubtedly something to this argument. The wealthier a country is the more technical training it can afford, and that in turn makes it even wealthier. In the economic field it is always difficult to find strictly causal factors. The evidence is that education is a causal factor as far as income is concerned. In other words, if a country will increase the amount of education and technical training, the income will increase. In the light of all the information available, we are justified in saying that the income will increase

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[8]Clara M. Olson and N. D. Fletcher, Learn and Live, Alfred P. Sloan Foundation, Inc. (Lexington, 1946).

> far more than the cost of education. The more the education increases, the higher the income rises. In this sense we are justified in saying that more education will cause an increase in the income of a country.[9]

It is against this general background that the present study concerned with the relationship between educational opportunity and economic well-being in the several counties of Oklahoma is undertaken. More specifically the study seeks to shed some light on the following questions:

1. What differences in educational opportunity and economic well-being exist among the various counties of Oklahoma?

2. To what extent are differences in economic well-being and educational opportunity related?

3. Have any counties approached the optimum level beyond which educational support should not be extended?

4. Would an increase in the general level of support of education in Oklahoma be reflected in a general rise in the economic well-being of the state?

Need for the Study

The years since World War II have witnessed a considerable growth in the public concern and interest in the problems of education. Oklahoma, faced with lack of industrial growth, years of drouth, and a declining population, has had particular reason to consider the contribution which public education might make to the

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[9]Harold F. Clark, Education Steps Up Living Standards (Washington, D. C., 1945), p. 19.

improvement of the general economic well-being. State agencies have been created for the purpose of stimulating certain types of educational endeavor, for the purpose of increasing the industrialization of the state, and for the purpose of slowing the exodus of the well-educated youth (engineers, teachers, scientists and others) from the state. Education is presently undergoing a comprehensive appraisal to determine how effectively it is meeting its obligations. At such a time, it is important that the relationship between educational opportunity and economic well-being be understood as fully as possible.

The assumption of a direct relationship between educational opportunity and economic well-being in a community, while generally accepted by educational leaders, is not universally accepted outside of this field. Witness, for example, the frequent opposition to tax levies for school purposes by those who might be most benefitted by a general enhancement of the economic level of the community. It is possible that the demonstration of a clear-cut relationship between educational opportunity and economic well-being, if such exists, may serve as an effective instrument in bringing about a more desirable level of support for public education.

Delimitation of the Study

This study involved three general problems: the measurement of educational opportunity present in the several counties of Oklahoma; the measurement of the economic well-being of the populations of these counties; and a study of the relationship between educational oppor-

tunity and economic well-being in the counties. It was not the purpose of this study to validate the specific measures which were used in determining the educational opportunity and economic well-being of the counties. Rather, criteria which have been widely used in the past and which are generally accepted as reliable indices were utilized. Nor was it the purpose of this study to develop a causal relationship between educational opportunity and economic well-being. While in the opinion of the writer, this is possible of accomplishment, strictly causal relationships in the field of economics are notoriously difficult to demonstrate and were beyond the scope of the present study. The present study was, therefore, limited to an analysis of the significance of the relationship which exists between variations in educational opportunity and variations in economic well-being among the counties.

Hypothesis to be Tested

There is no significant difference between the levels of economic well-being of counties ranking high and those ranking low on an index of educational opportunity.

Purpose of the Study

It was the purpose of this study to determine to what extent variations in educational opportunity among the several counties of Oklahoma are associated with corresponding variations in the economic well-being of those counties.

Sources of the Data

In making this study, data were selected from the following sources:

1. The Twenty-Fourth Biennial Report of the State Department of Education of Oklahoma, 1954.

2. The Twenty-Fifth Biennial Report of the State Department of Education of Oklahoma, 1956.

3. The Annual Bulletin for Elementary and Secondary Schools published by the State Department of Education of Oklahoma, 1954.

4. The Eighth Biennial Report of the Oklahoma State Regents for Higher Education, 1956.

5. Public Health Statistics, State of Oklahoma, 1954, published by the Oklahoma State Department of Health.

6. Reports of the Division of Research and Statistics of the Oklahoma Tax Commission.

7. Monthly Bulletins of the Oklahoma Department of Public Welfare, 1953-1954.

8. Eleventh Biennial Report of the Oklahoma Tax Commission, 1954.

9. County and City Data Book, 1952, published by the U. S. Bureau of the Census.

10. County Business Patterns, 1953-1954, published by the U. S. Bureau of the Census.

11. Population statistics published by the U. S. Bureau of the Census.

Procedure Used in the Study

After a careful review of the history and development of the problem, the following steps were deemed essential to the completion of the study:

1. Items indicative of the educational opportunity available in the various counties were identified. The numerical value of each of the items was determined and they were combined with proper weighting to develop an index of educational opportunity. This index was applied to each of the state counties.

2. The counties were ranked on the basis of the index of educational opportunity and those constituting the upper and lower one-thirds when so ranked were identified.

3. Measures of economic well-being to be utilized were identified and their numerical values determined for each county.

4. Statistical tests were applied to determine the significance of the differences between the two groups of counties for each of the measures of economic well-being.

Organization of the Study

Chapter I of the thesis consists of a brief statement of the background of the problem followed by a short summary of the need for the study, a delimitation of the study, the hypothesis to be tested, the sources of data utilized, the procedure followed in the study, and a definition of terms.

Chapter II of the study contains the details of the measurement of educational opportunity and the development of these measurements to form an index of educational opportunity. In addition the chapter contains a brief summary of the problems associated with the measurement of educational opportunity and a brief survey of the validity of the items used in determining the index of educational opportunity.

The measures of economic well-being which are to be used in the study are also identified and their sources stated in this chapter.

Chapter III gives a statistical summary of the several measures selected as indices of economic well-being, the mean value of each such measure for each of the two groups of counties used in the study, and a statistical analysis of the significance of the difference between the means for the two groups.

Chapter IV is a brief summary of the study with attention directed toward some of the implications of the study. It contains conclusions and recommendations drawn from the study with an interpretation of their possible significance for future action.

Definition of Terms

In making this study, the following terms are used consistently and are hereby further defined:

Educational opportunity. That combination of favorable conditions provided by the educational authority which enables the individual to develop abilities, attitudes, and other forms of behavior of positive value in the society in which he lives.

Educational index. A statistically determined number which expresses comparative educational opportunity, as of an institution or a school district or a country.

Economic well-being. The ability of an individual or a group to obtain those material things which are necessary for comfort, happiness, continued prosperity and productivity.

Summary

In this chapter it has been shown that much of our present educational philosophy is based upon the high correlation assumed to exist between educational opportunity and economic well-being. This belief in the power of education was for a long period of time accepted on the basis of faith and everyday observation. During the present century much research has been devoted to the demonstration of the economic contribution which education can make to the individual and some research has been devoted to the study of the relationship which exists between educational opportunity and economic well-being of the society. Oklahoma, as a result of continued drouth, loss of population, and a lag in industrial expansion, stands clearly to gain from an understanding of the contribution which continued educational progress may make to the individual and to the state.

CHAPTER II

THE MEASUREMENT OF EDUCATIONAL OPPORTUNITY AND ECONOMIC WELL-BEING

Since 1900 the use of index numbers[1] has increased markedly in the fields of statistics, economics, and business. It is to be expected that educational leaders would adopt the new technique for a study of some of the more pressing problems of education. Numerous such studies have been made. The usual procedure is to identify several measures or factors which are indicative of the single more complex variable under study. These separate measures were then combined through various techniques to give a more accurate picture of the more complex variable. Educational efficiency, educational opportunity, and educational support by a community are problems which have been handled in this way. Many studies have been made of each of these problems at all levels of control: local, county, state, and national.

The pioneer study by Ayres[2] in 1912 followed by his more well known study[3] in 1920 have served to set the pattern followed by most

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[1]For a summary of the history and application of index numbers see Irving Fisher, The Making of Index Numbers (Boston, 1922).

[2]Leonard A. Ayres, A Comparative Study of the Public School Systems in the Forty-Eight States (New York, 1912).

[3]Leonard A. Ayres, An Index Number for State School Systems (New York, 1920).

researchers since. Ayres[4] made use of the following items in determining the educational efficiency of a state school system:

1. Per cent of school population attending school daily.
2. Average days attended by each child of school age.
3. Average number of days schools were kept open.
4. Per cent that high school attendance was of total attendance.
5. Per cent that boys were of girls in high schools.
6. Average expenditure per child attending school.
7. Average expenditure per teacher employed.
8. Average expenditure per child of school age.
9. Expenditure per pupil for purposes other than teachers' salaries.
10. Expenditure per teacher for salaries.

In the Ayres index, each of the individual items was so weighted that the median value was 100. The final index then was merely the sum of the simple indexes divided by ten. Although the index method used was not subject to criticism, the results obtained by Ayres were openly questioned by many authorities. Specifically, many felt that financial items had been too heavily weighted, that wealthy states were therefore at an advantage, that some items were insignificant, and that states with heavy private school enrollements were improperly represented. Despite these objections several states adopted the Ayres index as a part of their regular annual report for all schools and, as has been suggested earlier, the Ayres research has influenced most of the similar work since.

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[4]Ibid., p. 34.

Schrammel,[5] Burton,[6] and Phillips[7] each made some revision of the Ayres scale and made new applications of the scale. Their most significant contributions were the revision of the financial items used in the index and the use of rank methods in arriving at the composite index. In essence the latter method was to rank each school division (city, county, or state) on each of the items in the scale and then a sum of these ranks was taken as the final composite scale. Coefficients of correlation between their work and the earlier work of Ayres were usually between 0.65 and 0.90. Since each of these researchers was concerned with a study of educational efficiency and since the present study concerns a slightly different concept, that of educational opportunity, their work will not be reported in more detail at this time. It should be pointed out also that the items used by these authors and those used in measuring educational opportunity in the present study will differ for the same reason.

There have been relatively few studies of this type made on the basis of the county as the reporting unit. One of the first and

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[5]Henry E. Schrammel, The Organization of State Departments of Education (Columbus, 1926).

[6]Alonzo C. Burton, A Study of Education in Rural and Urban States (Unpub. Master's Thesis, George Peabody College for Teachers, 1927).

[7]Frank M. Phillips, "Educational Rank of States, 1930," American School Board Journal, LXXXIV (Feb., March, April, May, 1932).

[8]E. E. Brown, A Statistical Survey by Counties of Education in Oklahoma, State Department of Education (Oklahoma City, 1925).

possibly most complete of these was the study made by Brown in Oklahoma. Brown was attempting to measure the relative educational achievement of the various counties and used the original ten items of the Ayres index, four of which he revised slightly, and in addition added three new factors. These additional factors were indicative of certain "educational mileposts" passed by students and teachers. They were:

1. The number of graduates from the eighth grade.
2. The number of graduates from accredited four-year high schools.
3. The number of teachers having two or more years of college.

Brown weighted these factors so that they carried the same weight as five of the original Ayres items.

Turner[9] made a similar study of financial practices in the counties of the Southern States but used only six items. Adams[10] in one of the most intricate studies of educational efficiency made use of thirty-six items in his analysis of the counties of Kentucky. Since all of these studies again involved educational efficiency as opposed to educational opportunity, they are not reported in detail. They do serve, however, to indicate the number of items usually used in the determination of a composite index such as that to be used in the present study.

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[9]H. L. Turner, Tentative Standards for the Distribution of Expenditures in County School Systems in the South (Nashville, 1929).

[10]Jesse E. Adams, A Study in the Equalization of Educational Opportunities in Kentucky (Lexington, 1928).

Only a few studies have been made which specifically proposed to measure educational opportunity and most of these have been at either the state or national level. Thus, in 1943, the Educational Conference Board of New York State[11] reported a study which compared the results obtained in the schools of New York at various levels of expenditure. The study was undertaken by the Committee on State Aid of the Educational Conference Board as a companion study to "An Improved System of State School Finance" published in 1940. It was specifically designed to show the improved results obtained when the level of expenditure is higher and thus served as an effective instrument in attempts to lift the level of support. The study is unique in that it did not deal with statistical data but went directly into the schoolroom to look at practices recognized by educational leaders as indicative of good educational policy and method. Schools were divided into three groups on the basis of expenditure per student and were evaluated in terms of several criteria in each of the following areas:

1. Reading, writing, arithmetic.
2. Basic knowledge for Americans
3. Learning to think
4. Exploring pupils' abilities
5. The growth of character
6. Health and safety of children
7. Homes for America
8. The world of work

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[11]New York Educational Conference Board, What Education Our Money Buys (Albany, 1943).

9. Developing citizens

10. Regard for the individual

11. The school and community

12. The teacher and the school

The results of the study demonstrated conclusively that the number and quality of desirable practices increased significantly with increase in the level of support of the several schools.

In 1946 the National Education Association and the American Council on Education[12] released a study dealing with the educational opportunities present in the forty-eight states. This study, like the New York State study, divided the schools into three levels of expenditure and reported on the opportunities present in schools of each expenditure level. Again opportunity was found to increase significantly with increase in the level of expenditure. The study was a frank plea for federal aid in the equalization of educational opportunity and used per cent of children (ages 5-17) not in any school, per cent of selectees (May to September 1941) who were illiterate, expenditure per classroom, and similar statistics to demonstrate the level of opportunity present in the various states.

The latest study of this nature was that of Frances Rummell[13] reported in 1955. Rummell reported the relative standing of each of the forty-eight states on the basis of financial support for

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[12] J. K. Norton and E. S. Lawler, Unfinished Business in American Education (Washington, D. C., 1946).

[13] Frances Rummell, "How Your State Ranks in Education," Look, September 20, 1955. p. 74-75.

education, the status of teacher, and the results obtained by the schools. Since it is the latest of such studies and is directly concerned with the measurement of educational opportunity, the com set of criteria used by Rummell is given immediately below.

Financial support:

1. Money spent per pupil in 1950-1951.
2. Money spent per classroom in 1949-1950.
3. Average value of public-school property per pupil for 1949-1950.

Teacher status:

1. Classroom teachers' salaries.
2. Percentage of elementary teachers with fewer than four years of college.

Results obtained:

1. Percentage of population 25 years or older with fewer than five years of schooling as of 1950.
2. Percentage of selective service personnel who failed Armed Forces qualification tests from July 1950 to June 1951.
3. Percentage of 1943-1944 fifth grade pupils who completed high school in 1950-1951.

To date, no similar study has been made for any state school system with the county as the reporting unit.

Since the major problem of this study was the determination relationships between educational opportunity and economic well-b it became necessary to identify those measures of educational opp tunity which were to be used throughout the remainder of the stud Those measures which were selected are:

1. Total ADA (elementary and high school) per high school district.
2. Average number of Carnegie units offered in senior high schools.
3. Expenditure from local funds per pupil in ADA
4. Average classroom teacher's salary.
5. Per cent of persons 14-17 years of age in school.
6. Per cent of high school enrollment 1951-1952 enrolled in college 1955-1956.

Sufficiency and Accuracy of the Data

The question arises as to the sufficiency of the six items listed above as indicators of the educational opportunity available in a county. As previously noted, Ayres made use of ten items, Brown used thirteen, Dawson and Ferrell used six and the most recent study by Rummell used eight. However, with one exception, these studies were directed toward the measurement of educational efficiency and as a result included several financial items not considered necessary in the current study. It would seem that the six items identified are sufficient, provided it can be demonstrated that each contributes something significant to the study and that each can accurately be determined.

Concerning the accuracy of this type of data the following quotation from Dr. Ayres is appropriate:

> Fortunately the data used are of a high degree of accuracy as compared with most other sorts of mass statistics. Data for school attendance are gathered at their source daily in set forms by people who are paid for their work and they are compiled in permanent offices by paid employees. Something of the same condi-

> tions maintain with respect to figures for the public school expenditures. There are few other kinds of data of comparable sort for which so much may be claimed on the side of reliability. As compared with censuses of population, occupations, or manufacturers, or government data on agriculture, or strength returns for the Army, Navy and Marine Corps, the data for school attendance and gross expenditures are certainly in the lead in the matter of accuracy. As compared with data for the results of phychological tests or measurements of classroom products they are almost indefinitely more reliable.[14]

The data used in this report were certainly as reliable as those used by Ayres. The only place for error would seem to be in the two transcriptions that have taken place between their original compilation in the local district and their publication in the official publications of the State Department of Education of Oklahoma. Further such related statistics as enrollments, enumerations, and ADA's are reported separately so that any gross error in *any one* would certainly be reflected in its obvious disagreement with the other data.

Measure 1 - Total ADA per High School District

Dawson[15] has recommended, as a minimum standard for attendance units, 245 pupils for the 7-9 type of organization and 219 pupils for

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[14]Ayres, An Index Number for State School Systems, p. 31.

[15]Howard A. Dawson, Satisfactory Local School Units, George Peabody College for Teachers (Nashville, 1934).

the 7-12 type of organization. This recommendation received further support from an Oklahoma study[16] which arrived at essentially the same conclusions. School authorities feel quite strongly that a small high school cannot possibly offer some types of school opportunities which are present in the larger systems. True, there is probably an optimum size for the high school attendance unit, but this is far greater than those with which the present study is concerned. For this reason, the total ADA (elementary and high school) divided by the number of high school districts maintained in the county was taken as one measure of the educational opportunity afforded by the county. It should be pointed out that this figure is not directly comparable with the minimum standards quoted previously as the latter figure is for high school pupils only. The net result is that the figure used for this study is greater by the ratio of the total ADA to the high school ADA. This factor has been determined to be fairly constant for the state of Oklahoma and the use of it eliminates some of the difficulties due to differences in the junior high school-senior high school structures in different school districts.

Measure 2 - Average number of Carnegie units

This statistic reflects more clearly than any other the student's opportunity to participate in a broad range of experiences while in

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[16]Oklahoma Study of Local School Units (J. Andrew Holley, Director), Study of Local School Units in Oklahoma (Oklahoma City, 1937), p. 93.

school. It is included for this reason. In arriving at the value to be used it was important to consider not only the number of Carnegie units offered but also the number of students who were able to take advantage of the offering. For this reason the number of students in each school was multiplied by the number of units offered in the school, the resulting figure was summed for the county and the value arrived at divided by the total number of high school students in the county. The high school ADA was used as statistically more significant than either the high school enrollment or enumeration. Neither of these first two measures were used by any of the studies previously reported.

Measure 3 - Expenditures from Local Funds per Child in ADA

This or a similar, statistic has been used in most previous studies. It is designed to indicate the ability and willingness of the local district to support its schools. The figure can be reliably determined by dividing the total county school income from local sources by the total county ADA. Since this study is concerned with educational opportunity it was deemed desirable to omit other items of a financial nature despite the fact that valuations per ADA and expenditures per classroom have been frequently used in earlier works.

Measure 4 - Average Salary of Classroom Teachers

It is generally recognized that "poor teachers make poor schools." A school cannot be good unless it has good teachers. The well-paid teacher tends, in terms of experience, preparation, and recent and continuous study, to be a better teacher. A large percentage of the

school's expenditures go for teacher salaries and it has been shown previously that total expenditures per pupil are closely related to the qualities of a school system which educators consider characteristic of good education.[17] For these reasons, teachers' salaries were considered one measure of educational opportunity. The figure used in this study was determined by dividing the total expenditure in a county for salaries of classroom teachers by the total number of such teachers in the county. Per cent of teachers without degrees or with Master's degrees are frequently used in studies of this nature, but the variation throughout Oklahoma was found to be so small as to contribute little of significance to the study.

Measure 5 - Per Cent of Persons 14-17 years of Age in School.

These data are taken from the County and City Data Book for 1952 and are reported from the general census of 1950. They are based on a twenty per cent sample and refer only to regular enrollments in schools or colleges leading to a diploma or degree. As such the data are probably not as reliable as some of the other data. Nevertheless, they are included here because of the undoubted significance of the information they contain. It is implied in the use of these data that a school system is not affording any opportunities to pupils who are not enrolled in the school. The per cent of persons over twenty-five

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[17] New York Educational Conference Board. What Education Our Money Buys (Albany, 1943).

who have more or less than some given level of education is sometimes used as an item in a study of this nature. However, Oklahoma is a young state and has seen a large amount of migration. It therefore seems inadvisable to place the responsibility for the education of people over the age of twenty-five with the county in which they presently reside.

Measure 6 - Per Cent of High School Enrollment 1951-1942 Enrolled in College 1955-1956

The 1951-1952 high school enrollment constitutes the classes which would be in the colleges in 1955-1956 providing we had a stable flow of students from high school to the colleges. There are many factors which have affected the stability of the student flow including the Korean War, the nearness of colleges, short term economic conditions and other factors. However, most of these would affect all of the counties in the same manner and relative ranks would be undisturbed. As a result, the per cent of the 1951-1952 enrollment which attended college in 1955-1956 was taken as an indication of the degree to which the local school has prepared the pupil for college and instilled an interest in or desire for continued education. In the actual computation, high school ADA was used instead of enrollment because of the frequent duplication of enrollment figures.

Each of these six measures has been calculated for each of the counties of Oklahoma and has been recorded, along with the rank of each county in Tables I through VI. In Table V for Measure 5, the data are imcomplete for four counties. The ranks shown for these

counties (Cimarron, Ellis, Harper, and Hughes) was taken as the average rank for each of the counties on the other five measures. Little, if any, error is introduced by this procedure since the counties fall in the middle one-third on the basis of the composite rank of educational opportunity and as such are not used in the statistical analysis which comprises the body of the study.

The Composite Index of Educational Opportunity

Educational opportunity for the purposes of this study has been defined in terms of six quantitative measures. These are: (1) total ADA per high school district; (2) average number of Carnegie units offered; (3) expenditures from local funds per child in ADA; (4) average salary of classroom teachers; (5) per cent of persons 14 to 17 years of age in school; and (6) per cent of high school enrollment 1951-1952 in college 1955-1956. In order to investigate the relationship between educational opportunity and economic well-being, it became necessary to combine the six measures into a single composite index. This may be done in several ways.

In arriving at his index, Ayres used an arbitrary figure of one hundred and so multiplied each measure by a constant that would make the mean value comparable to this standard. The final index was then one-tenth of the sum of the ten separate indexes thus arrived at. Brown used essentially the same technique but made use of thirteen items instead of the ten used by Ayres. Assuming normal distributions, this procedure assigns equal weight to each of the several items except for the error introduced by unequal measures of variability.

TABLE I

AVERAGE DAILY ATTENDANCE, GRADES ONE THROUGH TWELVE, DIVIDED BY NUMBER OF HIGH SCHOOL DISTRICTS, 1953-1954, BY COUNTY[18]

County	No. of Districts	Rank	County	No. of Districts	Rank
Adair	448	25	LeFlore	375	36
Alfalfa	187	73	Lincoln	318	48
Atoka	344	42	Logan	546	16
Beaver	180	75	Love	188	71.5
Beckman	338	43	McClain	316	49
Blaine	263	61	McCurtain	439	26
Bryan	321	46	McIntosh	294	51
Caddo	375	36	Major	259	62
Canadian	501	18.5	Marshall	598	11
Carter	548	15	Mayes	564	14
Cherokee	898	6	Murray	396	30
Choctaw	394	31.5	Muskogee	689	9
Cimarron	173	76	Noble	288	55
Cleveland	1360	3	Nowata	365	40
Coal	225	65	Okfuskee	281	56
Comanche	1038	4	Oklahoma	4322	1
Cotton	376	34	Okmulgee	499	20
Craig	323	45	Osage	289	54
Creek	527	17	Ottawa	813	7
Custer	475	23	Pawnee	292	52
Delaware	389	33	Payne	648	10
Dewey	266	60	Pittsburg	501	18.5
Ellis	258	63	Pontotoc	450	24
Garfield	586	12	Pottawatomie	495	21
Garvin	579	13	Pushmataha	275	58
Grady	368	39	Roger Mills	186	74
Grant	188	71.5	Rogers	430	27
Greer	242	64	Seminole	394	31.5
Harmon	216	68	Sequoyah	482	22
Harper	224	66	Stephens	795	8
Haskell	421	28	Texas	271	59
Hughes	319	47	Tillman	279	57
Jackson	291	53	Tulsa	2975	2
Jefferson	207	70	Wagoner	400	29
Johnston	172	77	Washington	1003	5
Kay	373	38	Washita	210	69
Kingfisher	220	67	Woods	337	44
Kiowa	348	41	Woodward	299	50
Latimer	375	36			

[18]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report (Oklahoma City, 1954).

TABLE II

AVERAGE NUMBER OF CARNEGIE UNITS OF ACCREDITATION PER HIGH SCHOOL STUDENT, 1953-1954, BY COUNTY[19]

County	Units	Rank	County	Units	Rank
Adair	33.0	26.5	LeFlore	31.9	29
Alfalfa	25.7	64.5	Lincoln	28.8	50
Atoka	25.1	72.5	Logan	33.2	24.5
Beaver	26.4	61	Love	22.5	76
Beckman	22.8	75	McClain	29.9	42
Blaine	27.0	56.5	McCurtain	30.0	40.5
Bryan	30.1	39	McIntosh	28.1	53
Caddo	31.6	33	Major	25.3	70.5
Canadian	46.6	6	Marshall	31.7	31
Carter	27.0	56.5	Mayes	36.4	18
Cherokee	42.3	10	Murray	29.2	47
Choctaw	30.3	37.5	Muskogee	47.4	5
Cimarron	25.7	64.5	Noble	31.7	31
Cleveland	40.3	12	Nowata	29.5	45
Coal	25.3	70.5	Okfuskee	30.7	36
Comanche	38.6	15	Oklahoma	64.6	1
Cotton	29.8	43	Okmulgee	33.0	26.5
Craig	29.4	46	Osage	28.9	49
Creek	37.7	16	Ottawa	35.7	19
Custer	37.3	17	Pawnee	33.3	23
Delaware	31.7	31	Payne	46.2	7
Dewey	25.5	68	Pittsburg	47.8	4
Ellis	26.8	60	Pontotoc	32.9	28
Garfield	43.2	9	Pottawatomie	41.5	11
Garvin	34.9	20.5	Pushmataha	25.6	66.5
Grady	34.9	20.5	Roger Mills	20.2	77
Grant	27.7	54	Rogers	31.3	34
Greer	25.4	69	Seminole	40.0	13
Harmon	27.6	55	Sequoyah	30.3	37.5
Harper	26.9	58.5	Stephens	38.8	14
Haskell	28.4	52	Texas	30.8	35
Hughes	29.0	48	Tillman	25.6	66.5
Jackson	26.9	58.5	Tulsa	58.4	2
Jefferson	26.1	62	Wagoner	29.6	44
Johnston	23.3	74	Washington	48.1	3
Kay	46.1	8	Washita	25.1	72.5
Kingfisher	25.8	63	Woods	34.7	22
Kiowa	30.0	40.5	Woodward	33.2	24.5
Latimer	28.5	51			

[19]Oklahoma State Department of Public Instruction, Annual Bulletin for Elementary and Secondary Schools (Oklahoma City, 1954).

TABLE III

TOTAL EXPENDITURES FROM LOCAL FUNDS PER PUPIL IN ADA, 1953-1954, BY COUNTY[20]

County	$	Rank	County	$	Rank
Adair	34.58	77	Le Flore	55.99	69
Alfalfa	265.58	5	Lincoln	125.16	33
Atoka	70.36	64	Logan	147.89	21
Beaver	360.66	2	Love	96.85	49
Beckman	139.79	24	McClain	87.54	60
Blaine	154.89	18	McCurtain	40.65	74
Bryan	75.56	71	McIntosh	55.87	70
Caddo	96.41	50	Major	159.71	17
Canadian	148.27	20	Marshall	96.39	51
Carter	90.48	54	Mayes	62.06	67
Cherokee	39.80	75	Murray	138.34	27
Choctaw	54.22	71	Muskogee	89.43	57
Cimarron	303.22	3	Noble	238.81	7
Cleveland	98.21	45	Nowata	102.41	42
Coal	89.88	55	Okfuskee	100.90	43
Comanche	112.42	36	Oklahoma	154.61	19
Cotton	116.30	35	Okmulgee	88.21	59
Craig	132.21	29	Osage	178.57	15
Creek	97.81	49	Ottawa	98.90	46
Custer	144.93	22	Pawnee	110.28	38
Delaware	34.80	76	Payne	138.14	28
Dewey	131.95	30	Pittsburg	68.36	65
Ellis	195.13	11	Pontotoc	96.96	48
Garfield	198.56	10	Pottawatomie	90.82	53
Garvin	108.04	39	Pushmataha	70.94	63
Grady	126.86	32	Roger Mills	138.64	26
Grant	290.00	4	Rogers	88.74	58
Greer	119.61	34	Seminole	89.60	56
Harmon	105.75	40	Sequoyah	41.44	73
Harper	213.55	9	Stephens	98.48	44
Haskell	48.30	72	Texas	377.57	1
Hughes	94.16	52	Tillman	128.14	31
Jackson	105.38	41	Tulsa	181.81	14
Jefferson	112.37	37	Wagoner	65.83	66
Johnston	75.47	62	Washington	170.24	16
Kay	187.60	12	Washita	139.45	25
Kingfisher	264.10	6	Woods	217.13	8
Kiowa	142.67	23	Woodward	185.21	13
Latimer	57.79	68			

[20]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report (Oklahoma City, 1954).

TABLE IV

MEAN SALARY OF CLASSROOM TEACHERS, 1953-1954, BY COUNTY[21]

County	$	Rank	County	$	Rank
Adair	3120	73	Le Flore	3247	42
Alfalfa	3358	11	Lincoln	3245	43
Atoka	3236	50	Logan	3273	33
Beaver	3143	70	Love	3179	66
Beckman	3296	26	McClain	3260	38
Blaine	3337	14	McCurtain	3208	61
Bryan	3303	23	McIntosh	3177	67
Caddo	3216	56	Major	3214	57
Canadian	3361	10	Marshall	3301	24
Carter	3278	31	Mayes	3242	46.5
Cherokee	3093	75.5	Murray	3318	17
Choctaw	3238	49	Muskogee	3346	13
Cimarron	3149	69	Noble	3263	36
Cleveland	3398	7	Nowata	3266	35
Coal	3100	74	Okfuskee	3253	39
Comanche	3321	15	Oklahoma	3530	3
Cotton	3235	51.5	Okmulgee	3300	25
Craig	3233	54	Osage	3249	41
Creek	3289	29	Ottawa	3314	20
Custer	3306	21.5	Pawnee	3306	21.5
Delaware	3211	58.5	Payne	3427	4
Dewey	3274	32	Pittsburg	3209	60
Ellis	3379	9	Pontotoc	3235	51.5
Garfield	3241	48	Pottawatomie	3320	16
Garvin	3243	45	Pushmataha	3137	72
Grady	3291	28	Roger Mills	3093	75.5
Grant	3357	12	Rogers	3161	68
Greer	3252	40	Seminole	3234	53
Harmon	3317	18	Sequoyah	3076	77
Harper	3139	71	Stephens	3406	6
Haskell	3197	63	Texas	3288	30
Hughes	3262	37	Tillman	3211	58.5
Jackson	3242	46.5	Tulsa	3823	1
Jefferson	3200	62	Wagoner	3181	65
Johnston	3183	64	Washington	3381	8
Kay	3596	2	Washita	3227	55
Kingfisher	3293	27	Woods	3268	34
Kiowa	3415	5	Woodward	3316	19
Latimer	3244	44			

[21]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report (Oklahoma City, 1954).

TABLE V

PER CENT OF PERSONS 14-17 YEARS OF AGE ENROLLED IN SCHOOL, 1950, BY COUNTY[22]

County	Per cent	Rank	County	Per cent	Rank
Adair	80.3	69	Le Flore	82.2	64
Alfalfa	95.3	3.5	Lincoln	86.7	24.5
Atoka	76.7	73	Logan	87.7	24.5
Beaver	92.4	6	Love	82.8	63
Beckman	82.1	65	McClain	86.9	33
Blaine	90.6	9.5	McCurtain	81.1	67.5
Bryan	88.2	20.5	McIntosh	79.7	70
Caddo	85.6	45	Major	86.9	33
Canadian	89.0	16	Marshall	86.1	42.5
Carter	87.6	27	Mayes	87.5	29
Cherokee	77.5	72	Murray	85.2	46.5
Choctaw	85.9	44	Muskogee	87.7	24.5
Cimarron *	----	46	Noble	96.3	2
Cleveland	90.1	12	Nowata	90.6	9.5
Coal	84.6	49.5	Okfuskee	86.6	38
Comanche	79.3	71	Oklahoma	88.5	19
Cotton	87.0	31	Okmulgee	83.7	55
Craig	83.1	60	Osage	88.2	20.5
Creek	89.9	13.5	Ottawa	83.4	56
Custer	86.3	40	Pawnee	88.1	22
Delaware	86.9	33	Payne	88.6	17.5
Dewey	98.0	1	Pittsburg	83.3	58
Ellis*	----	39	Pontotoc	86.5	39
Garfield	83.8	54	Pottawatomie	89.2	15
Garvin	84.1	51	Pushmataha	83.3	58
Grady	84.6	49.5	Roger Mills	92.2	7
Grant	95.3	3.5	Rogers	86.7	36
Greer	85.2	46.5	Seminole	89.9	13.5
Harmon	82.0	66	Sequoyah	82.9	61.5
Harper*	----	46	Stephens	87.6	27
Haskell	83.3	58	Texas	84.0	52.5
Hughes*	32.2	48.5	Tillman	86.7	36
Jackson	86.1	42.5	Tulsa	88.6	17.5
Jefferson	84.0	52.5	Wagoner	82.9	61.5
Johnston	81.0	67.5	Washington	84.7	48
Kay	90.5	11	Washita	87.3	30
Kingfisher	94.4	5	Woods	86.2	41
Kiowa	87.9	23	Woodward	91.7	8
Latimer	87.6	27			

*Average rank for county in other five measures.

[22]U. S. Bureau of the Census, County and City Data Book (Washington, D. C., 1953).

TABLE VI

PER CENT OF HIGH SCHOOL ENROLLMENT 1951-1952 ENROLLED IN OKLAHOMA STATE SUPPORTED COLLEGES 1955-1956, BY COUNTY[23]

County			County		
Adair	23.9	41.5	LeFlore	15.0	73
Alfalfa	36.3	12	Lincoln	18.5	59.5
Atoka	18.1	61	Logan	27.1	25
Beaver	40.9	9	Love	14.1	75
Beckman	18.5	59.5	McClain	21.5	47
Blaine	20.0	52	McCurtain	19.6	53
Bryan	34.9	14	McIntosh	19.4	55
Caddo	20.2	50	Major	26.4	29.5
Canadian	21.7	45	Marshall	35.1	13
Carter	26.5	27	Mayes	17.3	66
Cherokee	42.5	8	Murray	28.6	21
Choctaw	19.0	57	Muskogee	24.9	38
Cimarron	32.2	19	Noble	26.4	29.5
Cleveland	71.9	1	Nowata	11.2	77
Coal	23.9	41.5	Okfuskee	17.4	64.5
Comanche	46.4	7	Oklahoma	32.5	18
Cotton	16.9	68	Okmulgee	25.8	33
Craig	19.5	54	Osage	21.6	46
Creek	16.6	69	Ottawa	30.1	20
Custer	38.2	10	Pawnee	19.2	56
Delaware	11.9	76	Payne	50.9	3
Dewey	22.5	43	Pittsburg	34.0	16
Ellis	20.1	51	Pontotoc	47.7	6
Garfield	24.5	39.5	Pottawatomie	17.6	63
Garvin	27.2	24	Pushmataha	21.3	48
Grady	32.9	17	Roger Mills	26.4	29.5
Grant	37.1	11	Rogers	17.7	62
Greer	15.9	70	Seminole	24.5	39.5
Harmon	25.7	34	Sequoyah	15.5	72
Harper	26.9	26	Stephens	21.0	49
Haskell	17.0	67	Texas	56.2	2
Hughes	18.6	58	Tillman	22.0	44
Jackson	25.2	37	Tulsa	17.4	64.5
Jefferson	15.6	71	Wagoner	14.4	74
Johnston	27.8	23	Washington	28.2	22
Kay	34.6	15.	Washita	26.4	29.5
Kingfisher	26.2	32	Woods	49.3	4
Kiowa	25.3	36	Woodward	25.5	35
Latimer	48.1	5			

[23]Oklahoma State Regents for Higher Education, Eighth Biennial Report (Oklahoma City, 1956).

For example, teacher salaries may vary through a range of plus or minus ten percent while the number of units of study offered may vary through a range of plus or minus one hundred per cent or more Counties ranking near the mean would receive equal weights for these two items while counties ranking high or low would receive quite different weights for the two items.

To correct this situation, Ferrell and others have adopted the procedure of reducing all items to standard scores which are then directly additive and result in equal weights for the several items. Barton and Phillips have shown that approximately the same results are obtained by rank methods. Each of these researchers reduced preliminary measures to relative ranks for each county or district being used. The final index is then determined by summing the indexes of the individual items. The latter method is direct, results in equal weights for the same relative standing on any of the measures and is therefore the method which has been adopted for the present study. Table VII, pages 34-36, shows the rank of each county on each of the items used, the total of these ranks, and the final composite rank. The composite rank was arrived at by assigning the rank of one to the county with the lowest total, and so forth. Since the geographical location of the counties scoring high or low on the index of educational opportunity may be of immediate significance to persons acquainted with the state, this information is shown graphically in Figure 1, page 37. The plus sign (+) indicates a county in the upper one-third on the composite rank of educational opportunity while counties designated by a minus sign (-) were in the lower one-third on the index. Finally, Table VIII, page 38, shows the counties listed in the order of their

rank on the basis of the composite index of educational opportunity.

The Measurement of Economic Well-Being

As was indicated in Chapter I, the relationship between economic well-being and educational opportunity for an individual has been rather extensively investigated. This is not the case for the relationship between the two quantities when the unit is a large geographical, political, or economic group instead of the individual. With the exception of the work done by Charles Johnson[24] and Harold F. Clark[25] there has been little recorded study of the relationship between level of education and economic advancement. In these studies, which are considered in more detail in Chapter III, no attempt is made to develop an index of economic well-being. The procedure has always been to identify certain statistical items which are taken as indicative of economic well-being and to consider each of these separately to determine how they fluctuate with changes in the level of education in the societies or groups being considered.

Indexes of economic well-being have, of course, been developed. An example is the "Farm Operator Level of Living Index" used by the U. S. Bureau of the Census in their statistical reports. This index of economic well-being for farmers in the counties of the United States is based upon four quantitative factors. These are: (1) per cent of farms with electricity, (2) per cent of farms with telephones,

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[24]Charles Johnson, Education and the Cultural Crisis (New York, 1951).

[25]Harold F. Clark, Education steps up Living Standards, p. 17.

TABLE VII

RELATIVE RANK ON EACH OF THE MEASURES OF EDUCATIONAL OPPORTUNITY, TOTAL RANK, AND COMPOSITE RANK, BY COUNTY

County	Measure of Educational Opportunity						Total Rank	Composite Rank
	1	2	3	4	5	6		
Adair	25	26.5	77	73	69	41.5	312	64
Alfalfa	73	64.5	5	11	3.5	12	169	19
Atoka	42	72.5	64	50	73	61	362.5	73
Beaver	75	61	2	70	6	9	223	37
Beckham	43	75	24	26	65	59.5	292.5	61
Blaine	61	56.5	18	14	9.5	52	211	33
Bryan	46	39	61	23	20.5	14	203.5	30
Caddo	36	33	50	56	45	50	270	49
Canadian	18.5	6	20	10	16	45	115.5	7
Carter	15	56.5	54	31	27	27	210.5	32
Cherokee	6	10	75	75.5	72	8	246.5	43
Choctaw	31.5	37.5	71	49	44	57	290	59
Cimarron	76	64.5	3	69	(46)a	19	277.5	52
Cleveland	3	12	45	7	12	1	80	3
Coal	65	70.5	55	74	49.5	41.5	355.5	72
Comanche	4	15	36	15	71	7	148	11.5
Cotton	34	43	35	51.5	31	68	262.5	45
Craig	45	46	29	54	60	54	288	57
Creek	17	16	49	29	13.5	69	193.5	27
Custer	23	17	22	21.5	40	10	133.5	8
Delaware	33	31	76	58.5	33	76	307.5	63
Dewey	60	68	30	32		43	234	41
Ellis	63	60	11	9	(39)a	51	233	40
Garfield	12	9	10	48	54	39.5	172.5	20.5
Garvin	13	20.5	39	45	51	24	192.5	26

TABLE VII (Continued)

Grady	39	20.5	32	28	49.5	17	186	24
Grant	71.5	54	4	12	3.5	11	156	15
Greer	64	69	34	40	46.5	70	323.5	67
Harmon	68	55	40	18	66	34	281	54.5
Harper	66	58.5	9	71	(46)[a]	26	276.5	50.5
Haskell	28	52	72	63	58	67	340	69
Hughes	47	48	52	37	(48.5)[a]	58	290.5	60
Jackson	53	58.5	41	46.5	42.5	37	278.5	53
Jefferson	70	62	37	62	52.5	71	354.5	71
Johnston	77	74	62	64	67.5	23	367.5	76
Kay	38	8	12	2	11	15	86	4
Kingfisher	67	63	6	27	5	32	200	29
Kiowa	41	40.5	23	5	23	36	168.5	18
Latimer	36	51	68	44	27	5	231	39
LeFlore	36	29	69	42	64	73	313	65
Lincoln	48	50	33	43	36	59.5	369.5	48
Logan	16	24.5	21	33	24.5	25	144	9
Love	71.5	76	49	66	63	75	400.5	77
McClain	49	42	60	38	33	47	269	46.5
McCurtain	26	40.5	74	61	67.5	53	322	66
McIntosh	51	53	70	67	70	55	366	75
Major	62	70.5	17	57	33	29.5	269	46.5
Marshall	11	31	51	24	42.5	13	172.5	20.5
Mayes	14	18	67	46.5	29	66	240.5	42
Murray	30	47	27	17	46.5	21	188.5	25
Muskogee	9	5	57	13	24.5	38	146.5	10
Noble	55	31	7	36	2	29.5	160.5	16

TABLE VII (Continued)

Nowata	40	45	42	35	9.5	77	248.5	44
Okfuskee	56	36	43	39	38	64.5	276.5	50.5
Oklahoma	1	1	19	3	19	18	61	1
Okmulgee	20	26.5	59	25	55	33	218.5	35
Osage	54	49	15	41	20.5	46	225.5	38
Ottawa	7	19	46	20	56	20	168	17
Pawnee	52	23	38	21.5	22	56	212.5	34
Payne	10	7	28	4	17.5	3	69.5	2
Pittsburg	18.5	4	65	60	58	16	221.5	36
Pontotoc	24	28	48	51.5	39	6	196.5	28
Pottawatomie	21	11	53	16	15	63	179	22
Pushmataha	58	66.5	63	72	58	48	365.5	74
Roger Mills	74	77	26	75.5	7	29.5	289	58
Rogers	27	34	58	68	36	62	285	56
Seminole	31.5	13	56	53	13.5	39.5	206.5	31
Sequoyah	22	37.5	73	77	61.5	72	343	70
Stephens	8	14	44	6	27	49	148	11.5
Texas	59	35	1	30	52.5	2	179.5	23
Tillman	57	66.5	31	58.5	36	44	293	62
Tulsa	2	2	14	1	17.5	64.5	101	5
Wagoner	29	44	66	65	61.5	74	339.5	68
Washington	5	3	16	8	48	22	102	6
Washita	69	72.5	25	55	30	29.5	281	54.5
Woods	44	22	8	34	41	4	153	14
Woodward	50	24.5	13	19	8	35	149.5	13

[a]Data for this statistic not available. The figure shown in parenthesis was arrived at by taking the average rank for the county on the remaining five measures of educational opportunity.

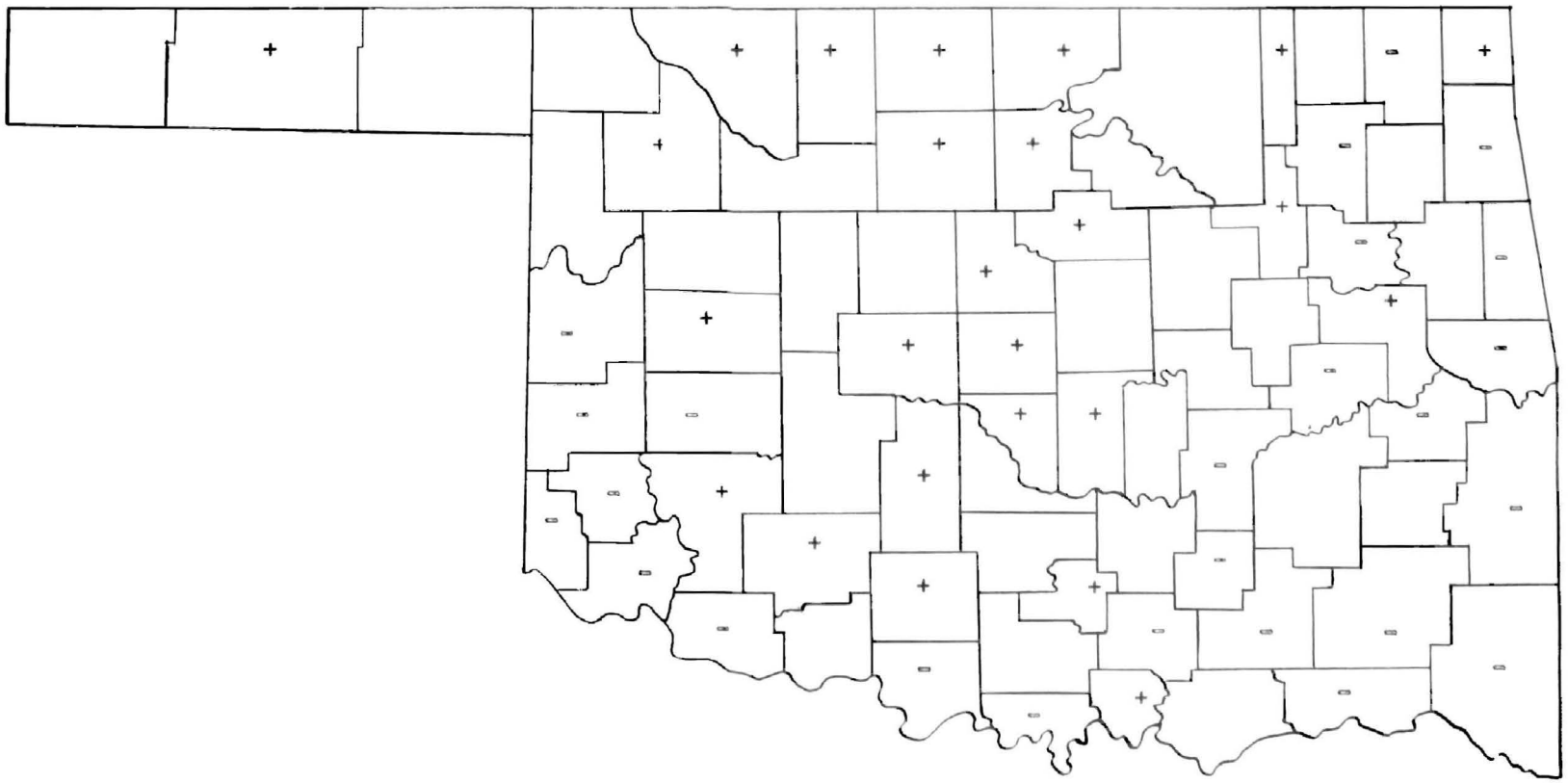

Figure 1. Counties Ranking in the Upper One-Third (+) and Counties Ranking in the Lower One-Third (-) on the Composite Index of Educational Opportunity.

TABLE VIII

COUNTIES OF OKLAHOMA LISTED IN ORDER OF RANK ON THE COMPOSITE INDEX OF EDUCATIONAL OPPORTUNITY

County	Rank	County	Rank
Oklahoma	1	Ellis	40
Payne	2	Dewey	41
Cleveland	3	Mayes	42
Kay	4	Cherokee	43
Tulsa	5	Nowata	44
Washington	6	Cotton	45
Canadian	7	McClain	46.5
Custer	8	Major	46.5
Logan	9	Lincoln	48
Muskogee	10	Caddo	49
Comanche	11.5	Harper	50.5
Stephens	11.5	Okfuskee	50.5
Woodward	13	Cimarron	52
Woods	14	Jackson	53
Grant	15	Harmon	54.5
Noble	16	Washita	54.5
Ottawa	17	Rogers	56
Kiowa	18	Craig	57
Alfalfa	19	Roger Mills	58
Garfield	20.5	Choctaw	59
Marshall	20.5	Hughes	60
Pottawatomie	22	Beckham	61
Texas	23	Tillman	62
Grady	24	Delaware	63
Murray	25	Adair	64
Garvin	26	LeFlore	65
Creek	27	McCurtain	66
Pontotoc	28	Greer	67
Kingfisher	29	Wagoner	68
Bryan	30	Haskell	69
Seminole	31	Sequoyah	70
Carter	32	Jefferson	71
Blaine	33	Coal	72
Pawnee	34	Atoka	73
Okmulgee	35	Pushmataha	74
Pittsburg	36	McIntosh	75
Beaver	37	Johnston	76
Osage	38	Love	77
Latimer	39		

(3) per cent of farms with automobiles and, (4) average value of farm product sold or traded in the previous year.

For purposes of this study, economic well-being has been defined as the ability of an individual or a group to obtain those material things which are necessary for comfort, happiness, continued prosperity, and productivity. No attempt was made to develop an index of economic well-being. Rather, seventeen statistically available items have been identified which are indicative of the level of economic attainment of the various counties. In Chapter III, each of these items will be studied to determine in what manner they are related to the educational opportunity of the different counties. The items which were used as indicative of economic well-being in the study are:

I. Those items directly indicative of income in the county.

   A. Median family income, 1950.

   B. Per cent of families having incomes less than $2000, 1950.

II. Those items indicative of the "level of living" in the county.

   A. Per cent of all dwellings with hot running water, separate bath, and not dilapidated, 1950.

   B. Per cent of all dwellings with mechanical refrigeration, 1950.

   C. Per cent of all farms with electricity, 1950.

   D. Farm-operator level-of-living index, 1950.

   E. Average automobile license fee collected per vehicle registered, 1953.

III. Those items indicative of the economic activity of the county.

   A. Number of automobile registrations per 1000 of population, 1953.

   B. Annual sales tax collected per capita, 1954.

C. Annual sales tax collected on food sales, per capita, 1954.

D. Sales tax collected on food sales per business establishment per reporting period, 1953-1954.

IV. Those items indicative of savings and personal economic worth.

A. E-Bond sales, per capita, 1950.

B. Value of land and buildings per farm, 1950.

V. Miscellaneous items indicative of economic well-being.

A. Per cent of county population receiving public assistance, June 1954.

B. Obligations incurred by the state for public assistance per capita, 1954.

C. Dollars returned to the county per dollar collected for purposes of public assistance, 1953.

D. Per cent of population increase or decrease from 1940 to 1950.

Sources and Accuracy of the Data for Economic Well-Being.

Data for items I (A and B), II (A through D), IV (A and B) and V (D), were taken from the County and City Data Book, 1952[26] and are based on final tabulations of the Seventeenth Decennial Census of the Population of the United States. Items I (A and B) are based on a twenty per cent sample and include wages, salaries, royalties, interest, pensions, dividends, and payments from trust funds. In general, they will tend to be under-estimated since they are based on memory instead of records and the tendency is to forget small amounts of income. Items II (A and B) are taken from the Census of Housing, 1950, and are also

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[26] U. S. Bureau of the Census, County and City Data Book, 1952 (Washington, D. C., 1952). p. 234.

based on a twenty per cent sample. Terms used by the census bureau in collecting the data are carefully defined and the data are generally considered quite significant. Mechanical refrigeration includes any type of refrigerator run by gasoline, kerosene, electricity or other form of power. In item II (A), both the structural condition and the type of plumbing facilities are considered measures of the quality of the housing.

Item II (D), the "farm-operator level-of-living index, is based on four separate measures of farm level-of-living. In each case, the data for each Oklahoma county is based on a sample of at least 800 farms and, therefore, the data are believed to be sufficient.

Items II (E), III (A through D), and item V (C) are taken from the biennial reports of the Oklahoma Tax Commission. They represent compilations of regular annual reports to the Oklahoma Tax Commission and are considered accurate to the same degree that such individual reports are accurate. Items V (A and B) are from the reports of the Division of Research, Department of Public Welfare. Tables X through XXVI in Chapter III give the numerical values of each of these indicators of economic well-being along with an analysis of the differences found between the two groups of counties which constitute the upper one-third and the lower one-third of Oklahoma Counties when ranked on the composite index of educational opportunity.

Summary

Educational opportunity was defined in terms of six quantitative measures. These are (1) total county ADA per high school district, (2) average number of Carnegie units of accreditation per high school student, (3) total local expenditures per ADA, (4) average salary per classroom teacher, (5) per cent of persons fourteen to seventeen years of age in school and, (6) per cent of high school enrollment 1951-1952 in college during 1955-1956. A composite index which gives equal weights to each of these items was formed by using a rank method similar to that of Burton as discussed earlier. The counties were listed in terms of their relative standing on this index and those falling in the upper and lower one-thirds were identified. These two groups constituted the study groups used in the study.

No attempt has been made to measure economic well-being of the counties directly. Instead seventeen items were selected which are indicative of the economic status of the counties. Each of these is discussed in the following chapter and an analysis is made to determine the significance of any differences between the two study groups in terms of their rating on the measures of economic well-being.

CHAPTER III

AN ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATIONAL OPPORTUNITY AND ECONOMIC WELL-BEING IN OKLAHOMA COUNTIES

As was indicated in the first chapter, numerous studies have been made of the relationship between educational attainment and the subsequent economic well-being of the educatee. However, with the exception of the work of Harold F. Clark at the national level and that of Charles S. Johnson in his studies of the socio-economic status of the colored race in the United States, little study has been made of the relationship between educational opportunity and the economic well-being of the society. In Chapter II, an index of educational opportunity was developed and applied to the several counties of Oklahoma. The counties were ranked on the basis of this index and those in the upper and lower one-thirds were identified as the study groups. In the same chapter, several measures of economic well-being were selected. The next step was to determine whether counties scoring high and those scoring low on the index of educational opportunity differ significantly on any or all of the measures of economic well-being.

This might be accomplished in several ways, among them the application of correlation techniques or the Chi-squares test. An analysis of the reliability of the difference between means by way of the "t-test" was adopted for this study. Inasmuch as the present

research dealt with two different groups, the means are uncorrelated and the formula for the reliability of the difference between two means is given by Garrett[1] as

$$\sigma_{M_1-M_2} = \sqrt{\sigma_{M_1}^2 + \sigma_{M_2}^2}$$

where σ_M represents the standard error of the mean. Since the value of N was considerably less than fifty (it was twenty-five in all cases except one), the formula for σ_M was taken as

$$\sigma_M = \frac{\sigma}{\sqrt{N-1}}$$

where σ is the standard deviation of the measure and N is the number of cases in the sample.

The following pages give the analysis for each of the indexes of economic well-being identified in the previous chapter. For convenience of reference the raw data and its source, the values of σ_1, σ_2, σ_{M_1}, σ_{M_2}, N_1, N_2, "t", and the level of significance of the difference between the two means are all given on a single page and in approximately the same form for each measure. In all cases, symbols with the subscript one (1) refer to data for counties which ranked high on the index of educational opportunity and symbols with the subscript two (2) refer to data for counties which ranked low on the index of educational opportunity. For ready comparison, these two groups of counties are listed in two vertical columns and in the order of decreasing rank on the index of educational opportunity. Tables X through XXVI give the data for each of the measures of economic well-

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[1]Henry E. Garrett, Statistics in Psychology and Education (New York, 1947).

being. More complete tables giving the data for all Oklahoma counties and source references are included in the appendix.

Table IX, page 46, summarizes the statistical information given in Tables X through XXVI. This table lists mean values for each group of counties, differences between means, critical ratios, and levels of significance of the difference between means for each of the seventeen indicators of economic well-being. Garrett[2] gives a critical ratio of 2.68 as necessary to establish a significant difference at the 0.01 level with forty-eight degrees of freedom. In two instances (sales tax collected on food sales per capita with a critical ratio of 3.30), this value of the critical ratio was approached. In all cases, however, the limiting value of 2.68 was exceeded and the difference between means was found to be significant at the 0.01 level. Further, in all cases the difference was in such a direction that the upper one-third of counties on the index of educational opportunity were found to have ranked higher on the measure of economic well-being.

Table IX and the above statement clearly indicate the relationship between educational opportunity, as defined by this study, and economic well-being. However, the full significance of the data is revealed only on more careful study of the individual items included as measures of economic well-being. Such an analysis accompanied by some half-dozen illustrative figures is therefore included.

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[2]Ibid., p. 464.

TABLE IX

SUMMARY OF MEAN VALUES, CRITICAL RATIOS AND LEVELS OF SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS FOR EACH OF THE SELECTED INDICATORS OF ECONOMIC WELL-BEING

Indicator of Economic Well-Being	M_1	M_2	C.R.	Level of Significance
Median family income (dollars)	2552	1543	7.19	0.01
Per cent of families with income less than $2000 (per cent)	38.2	62.8	7.43	0.01
Per cent of dwellings with hot water, not dilapidated	54.2	26.0	8.89	0.01
Per cent of dwellings with mechanical refrigeration	76.6	57.7	5.49	0.01
Per cent of farms with electricity	76.0	60.0	4.04	0.01
Farm operator level-of-living index	127	87.3	4.58	0.01
Average automobile license fee (dollars)	20.29	17.83	6.31	0.01
Automobile registrations per 1000 of population	302.4	207	5.71	0.01
Sales tax collected, per capita, (dollars)	15.46	8.40	5.65	0.01
Sales tax collected - food sales	4.01	2.61	2.71	0.01
Sales tax collected, food sales per business establishment	64.74	40.22	6.37	0.01
E-Bond sales per capita (dollars)	23.44	10.00	7.30	0.01
Value of land and buildings per farm (dollars)	18,650	9,820	3.30	0.01
Per cent of population receiving county assistance	5.96	12.60	6.45	0.01
Obligations incurred for public assistance per capita	26.84	51.57	6.17	0.01
Dollars returned to county for public assistance per dollar collected	2.21	8.17	7.54	0.01
Per cent of population increase or decrease 1940-1950	1.7	-21.9	4.62	0.01

Analysis of the Measures of Personal and Family Income Levels

In comparing the economic well being of two groups, one would naturally begin with an investigation of their relative income levels. In fact, Clark used per capita income as the sole index of economic well-being in his most publicized work. Two measures directly indicative of income level were included among the economic indicators used in this study. They were (1) median family income for the 1949 tax year and, (2) per cent of families with incomes less than $2000 for the 1949 tax year. Both statistics are from published data of the U. S. Bureau of the Census. These data are presented in Tables X and XI on pages 48 and 50.

The counties ranking in the upper one-third on the composite index of educational opportunity had median family incomes ranging from $1845 to $3486 with a mean value of $2555. Meanwhile, the counties in the lower one-third had median family incomes ranging from $881 to $2481 with a mean value $1543. It is immediately obvious that a significant difference exists between the two groups of counties--the difference between the two means being in excess of $1000, and nearly two thirds of the mean income of the second group. No county in the first group has a median family income as low as the mean value for the second group. No county in the second group was found to have a median family income as high as the mean of the first group. In fact, only five of the twenty-five counties which ranked in the lower one-third on the index of educational opportunity had median family incomes as high as the lowest member (Murray county with a median family income of $1845) of the other group.

TABLE X

MEDIAN FAMILY INCOMES IN DOLLARS, 1950, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	3221	Jackson	2224
Payne	2562	Harmon	2440
Cleveland	2545	Washita	2152
Kay	3047	Rogers	1823
Tulsa	3306	Craig	1510
Washington	3486	Roger Mills	1970
Canadian	2570	Choctaw	1096
Custer	2215	Hughes	1479
Logan	1911	Beckham	2481
Muskogee	2133	Tillman	2133
Comanche	2736	Delaware	1108
Stephens	2663	Adair	881
Woodward	2485	LeFlore	1346
Woods	2767	McCurtain	1140
Grant	2427	Greer	1887
Noble	2386	Wagoner	1360
Ottawa	2326	Haskell	1358
Kiowa	2165	Sequoyah	1198
Alfalfa	2318	Jefferson	1739
Garfield	2961	Coal	1185
Marshall	1864	Atoka	1252
Pottawatomie	2196	Pushmataha	1110
Texas	3767	McIntosh	1101
Grady	1846	Johnston	1223
Murray	1845	Love	1390

$M_1 = 2549.92$ $\quad M_2 = 1543.44$

$\sigma_1 = 509$ $\quad \sigma_2 = 457$

$\sigma_{M_1} = 103.9$ $\quad \sigma_{M_2} = 93.3$

$M_1 - M_2 = 1007$

$\sigma_{M_1 - M_2} = 140$

Critical Ratio = 7.19

Level of Significance = 0.01

Consideration of the per cent of families with incomes less than $2000 per annum yielded comparable results. The one-third of counties ranking high on the measure of educational opportunity ranged from 20.7 per cent to 54.0 per cent of families with an income of less than $2000. The mean value was 38.2 per cent. For the second group of counties, the respective figures were 39.4 per cent and 82.3 per cent with a mean of 62.8 per cent. Again, as was the case with median family income, no member of the first group of counties scored as low as the mean of the second group and no member of the second group scored as high as the mean of the first group. Note that this particular statistic is stated negatively so that a low percentage represents a relatively higher level of economic well-being.

It was interesting to note that the highest score is that of Texas county with only 20.7 per cent of the families having annual incomes of less than $2000. Texas county ranked twenty-third on the composite index of educational opportunity. However, Oklahoma county ranked second on this measure and first on the index of educational opportunity. Murray county ranked twenty-fifth on each of the two indices. The latter relationships indicate the high positive correlation between educational opportunity and economic well-being found throughout the study and is illustrated quite graphically in Figure 2, page 51, which shows the per cent of families with income less than $2000 plotted against the index of educational opportunity for each county in the two study groups.

TABLE XI

PER CENT OF FAMILIES HAVING INCOMES LESS THAN $2000, 1950, BY COUNTY

County	Per cent	County	Per cent
Oklahoma	23.3	Jackson	43.9
Payne	37.0	Harmon	41.1
Cleveland	37.4	Washita	45.9
Kay	28.8	Rogers	53.6
Tulsa	23.5	Craig	59.3
Washington	23.6	Roger Mills	50.8
Canadian	35.6	Choctaw	74.3
Custer	44.1	Hughes	61.6
Logan	51.9	Beckham	39.4
Muskogee	47.0	Tillman	46.6
Comanche	33.2	Delaware	75.1
Stephens	35.0	Adair	82.3
Woodward	37.7	LeFlore	68.6
Woods	33.7	McCurtain	76.6
Grant	39.1	Greer	53.4
Noble	40.4	Wagoner	65.4
Ottawa	43.2	Haskell	67.4
Kiowa	46.3	Sequoyah	72.3
Alfalfa	41.5	Jefferson	57.4
Garfield	27.3	Coal	72.6
Marshall	52.7	Atoka	73.3
Pottawatomie	44.9	Pushmataha	74.6
Texas	20.7	McIntosh	75.7
Grady	53.8	Johnston	72.1
Murray	54.0	Love	67.0

$M_1 = 38.2$ $\quad M_2 = 62.8$

$\sigma_1 = 9.77$ $\quad \sigma_2 = 12.9$

$\sigma_{M_1} = 1.99$ $\quad \sigma_{M_2} = 2.65$

$M_1 - M_2 = 24.6$

$\sigma_{M_1 - M_2} = 3.31$

Critical Ratio $= 7.43$

Level of Significance $= 0.01$

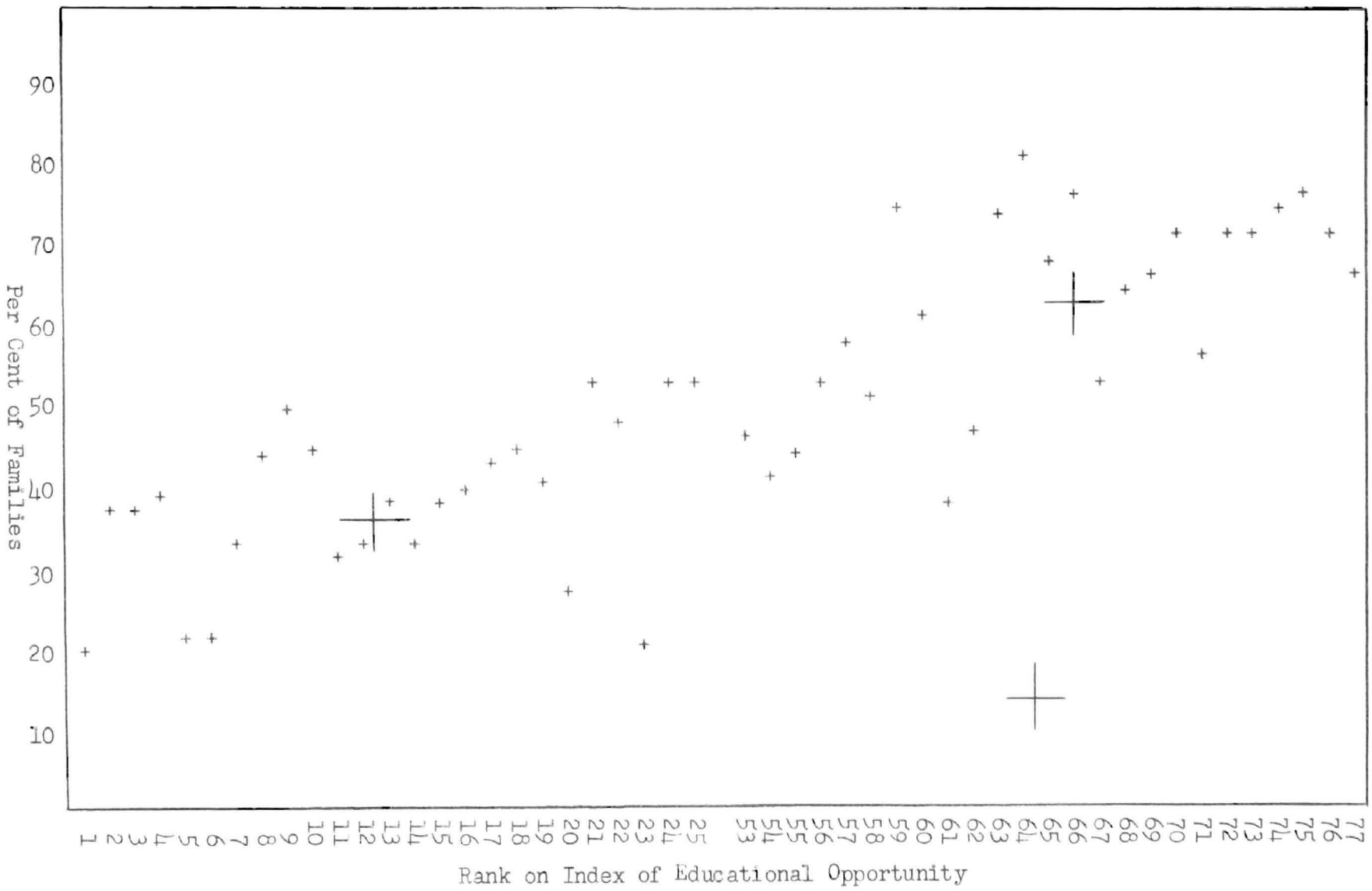

Figure 2. Per Cent of Families with Income Less Than $2000 Versus Rank on Index of Educational Opportunity.

Analysis of the Indicators of "Level-of-Living"

The present study included five economic indexes which are indicative of the "level-of-living" present in the several counties. These are (1) per cent of all dwellings with hot running water, separate bath and not dilapidated, (2) per cent of all dwellings with mechanical refrigeration, (3) per cent of all farms with electricity, (4) farm-operator level-of-living index and, (5) average automobile license fee collected per vehicle registered. Statistics for the first four measures are given in Tables XII through XV, pages 53, 54, 58 and 59 of the study. Sources of the data were publications of the U. S. Bureau of the Census and each of the items is reported for the year 1949 as given by the 1950 census. Data for item five is given in Table XVI, page 60, and were secured from publications of the Oklahoma Tax Commission.

The data show that in those counties ranked in the upper one-third on the basis of educational opportunity the mean per cent of homes described as "with hot running water, bath and not dilapidated was 54.2 per cent with a range of 35.5 per cent to 76.5 per cent. The comparable figures for the lower one-third of counties was a mean of 26.0 per cent with a range of 10.1 per cent to 52.1 per cent. It is noticed again that both the lowest score in the first group and the highest score in the second group fail to overlap the mean values of the opposite group.

Table XII shows the same type of relationship on the measure of per cent of homes with mechanical refrigeration. The upper group of counties, on the index of educational opportunity, show an average

TABLE XII

PER CENT OF ALL DWELLINGS WITH HOT RUNNING WATER, SEPARATE BATH AND NOT DILAPIDATED, 1950, BY COUNTY

County	Per cent	County	Per cent
Oklahoma	76.5	Jackson	45.3
Payne	61.3	Harmon	36.6
Cleveland	66.7	Washita	33.4
Kay	69.2	Rogers	33.5
Tulsa	73.2	Craig	33.5
Washington	60.5	Roger Mills	25.0
Canadian	55.0	Choctaw	21.4
Custer	50.3	Hughes	33.0
Logan	44.0	Beckham	52.1
Muskogee	52.1	Tillman	43.1
Comanche	58.7	Delaware	19.7
Stephens	53.6	Adair	13.8
Woodward	51.3	LeFlore	18.8
Woods	57.7	McCurtain	13.9
Grant	40.2	Greer	40.5
Noble	45.0	Wagoner	22.8
Ottawa	43.9	Haskell	19.8
Kiowa	43.5	Sequoyah	15.1
Alfalfa	48.4	Jefferson	33.1
Garfield	66.1	Coal	12.2
Marshall	35.5	Atoka	15.1
Pottawatomie	53.5	Pushmataha	10.1
Texas	63.9	McIntosh	18.2
Grady	45.4	Johnston	18.8
Murray	40.3	Love	21.0

$M_1 = 54.2$ $\quad$ $M_2 = 26.0$

$\sigma_1 = 10.7$ $\quad$ $\sigma_2 = 11.3$

$\sigma_{M_1} = 2.18$ $\quad$ $\sigma_{M_2} = 2.30$

$M_1 - M_2 = 28.2$

$\sigma_{M_1 - M_2} = 3.17$

Critical Ratio = 8.89

Level of Significance = 0.01

TABLE XIII

PER CENT OF ALL DWELLINGS WITH MECHANICAL REFRIGERATION, 1950, BY COUNTY

County	Per cent	County	Per cent
Oklahoma	83.7	Jackson	78.9
Payne	77.2	Harmon	82.2
Cleveland	84.1	Washita	79.2
Kay	80.1	Rogers	53.0
Tulsa	82.4	Craig	63.3
Washington	75.7	Roger Mills	68.0
Canadian	80.3	Choctaw	45.7
Custer	79.1	Hughes	65.6
Logan	66.2	Beckham	80.8
Muskogee	61.9	Tillman	76.4
Comanche	78.4	Delaware	38.7
Stephens	78.7	Adair	42.3
Woodward	73.5	LeFlore	48.0
Woods	80.9	McCurtain	45.4
Grant	87.4	Greer	81.3
Noble	75.3	Wagoner	40.8
Ottawa	64.7	Haskell	44.1
Kiowa	76.7	Sequoyah	40.1
Alfalfa	85.4	Jefferson	69.5
Garfield	83.2	Coal	48.7
Marshall	69.5	Atoka	43.8
Pottawatomie	71.6	Pushmataha	41.1
Texas	82.7	McIntosh	43.1
Grady	71.1	Johnston	55.1
Murray	66.0	Love	66.7

$M_1 = 76.6$ $\qquad$ $M_2 = 57.7$

$\sigma_1 = 7.1$ $\qquad$ $\sigma_2 = 15.4$

$\sigma_{M_1} = 1.44$ $\qquad$ $\sigma_{M_2} = 3.14$

$M_1 - M_2 = 18.9$

$\sigma_{M_1 - M_2} = 3.44$

Critical Ratio = 5.49

Level of Significance = 0.01

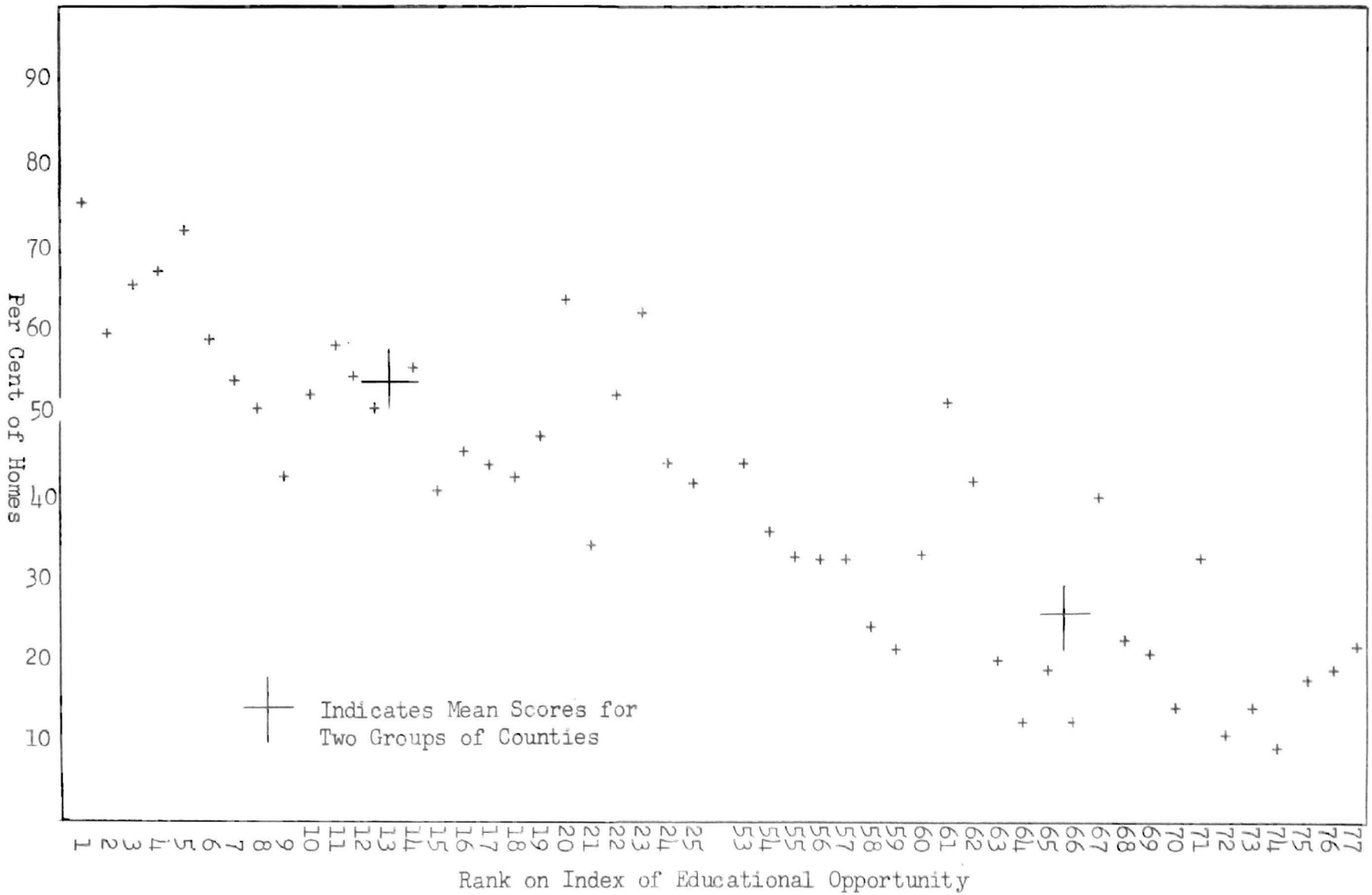

Figure 3. Per Cent of Homes with Hot Running Water, Bath and Not Dilapidated Versus Rank on the Index of Educational Opportunity.

of 76.6 per cent of homes with mechanical refrigeration and a range from 61.9 per cent to 87.4 per cent. Similarly, the counties in the lower one-third have a mean of 57.7 per cent and a range from 38.7 per cent to 82.2 per cent. In this case, there is some over-lapping of the two groups and the variation from the mean of the counties in the lower one-third was significantly larger than that of the upper one-third. This increased variability is indicated by the two to one ratio of the standard deviations for the two groups.

That the differences noted above are not due to rural-urban differences in the two groups of counties is indicated in part by data in Tables XIV and XV, pages 58 and 59. Table XIV shows the per cent of farms with electricity and Table XV gives the farm operator level-of-living index by county. This index was not given for three of the counties used in the study. These tables show 76.6 per cent of the farm homes in the first group of counties have electricity while the mean value for counties in the second group is 60 per cent. The farm operator level-of-living index ranged from 95 to 160 with a mean of 127 for those counties ranking high on the basis of educational opportunity and a range of 44 to 149 with a mean of 87 for the other set of counties. Thus, there is a highly significant difference in the level-of living of both the urban and rural populations of the two sets of counties.

Table XVI, page 60, gives the average vehicle license tax collected by the Oklahoma Tax Commission in each of the counties considered in the study. The difference between the two means, $20.29 as opposed to $17.83, indicates that automobile owners in the one group of counties

pay an average of $2.46 or approximately 14 per cent more tax per vehicle registered. This must represent a real difference in original value, age and present value of the vehicles being registered. A clear picture of this variation in the level-of-living between the various counties is given in Figure 3, page 55, which shows per cent of homes with hot running water, bath and not dilapidated and Figure 4, page 61, which shows the farm operator level-of-living index. Each is plotted against rank on the index of educational opportunity.

Analysis of Certain Indicators of Economic Activity

The foregoing has been sufficient to demonstrate a relationship between educational opportunity as defined in this study and the personal income and level-of living within the county. This still left in question the relationship between the educational opportunity present and the general economic activity present in a particular county. For this reason, four additional measures of economic well-being were included in the study. These were (1) number of automobile registrations per 1000 population, 1953; (2) annual sales tax collected per capita, 1954; (3) sales tax collected on food sales, per capita, 1953-1954; and (4) sales tax collected on food sales per business establishment per reporting period, 1953-1954. Details of these measures are given in Tables XVII through XX, pages 63, 64, 65 and 68. All data are from the records of the Oklahoma Tax Commission.

Table XVII shows that in the counties ranking high on the index of educational opportunity there was an average of 302 vehicles registered per 1000 population as compared to 207 vehicles per 1000 of

TABLE XIV

PER CENT OF ALL FARMS WITH ELECTRICITY, 1950, BY COUNTY

County	Per cent	County	Per cent
Oklahoma	77	Jackson	86
Payne	70	Harmon	85
Cleveland	83	Washita	86
Kay	89	Rogers	65
Tulsa	80	Craig	61
Washington	80	Roger Mills	79
Canadian	90	Choctaw	51
Custer	84	Hughes	54
Logan	66	Beckham	79
Muskogee	45	Tillman	87
Comanche	79	Delaware	43
Stephens	68	Adair	64
Woodward	76	LeFlore	55
Woods	81	McCurtain	41
Grant	82	Greer	72
Noble	81	Wagoner	44
Ottawa	67	Haskell	38
Kiowa	87	Sequoyah	35
Alfalfa	84	Jefferson	72
Garfield	83	Coal	57
Marshall	73	Atoka	43
Pottawatomie	67	Pushmataha	46
Texas	51	McIntosh	35
Grady	76	Johnston	58
Murray	71	Love	77

$M_1 = 76$ $\qquad$ $M_2 = 60$

$\sigma_1 = 9.8$ $\qquad$ $\sigma_2 = 16.7$

$\sigma_{M_1} = 2.0$ $\qquad$ $\sigma_{M_2} = 3.4$

$M_1 - M_2 = 16.0$

$\sigma_{M_1 - M_2} = 3.96$

Critical Ratio = 4.04

Level of Significance = 0.01

TABLE XV

FARM OPERATOR "LEVEL-OF-LIVING" INDEX, 1950, BY COUNTY

County	Index	County	Index
Oklahoma	122	Jackson	147
Payne	114	Harmon	143
Cleveland	117	Washita	143
Kay	150	Rogers	99
Tulsa	120	Craig	96
Washington	117	Roger Mills	119
Canadian	152	Choctaw	60
Custer	146	Hughes	69
Logan	115	Beckham	117
Muskogee	66	Tillman	149
Comanche	124	Delaware	64
Stephens	100	Adair	62
Woodward	139	LeFlore	62
Woods	159	McCurtain	44
Grant	160	Greer	120
Noble	135	Wagoner	62
Ottawa	99	Haskell	52
Kiowa	145	Sequoyah	48
Alfalfa	157	Jefferson	107
Garfield	156	Coal	63
Marshall	--	Atoka	56
Pottawatomie	95	Pushmataha	54
Texas	--	McIntosh	73
Grady	111	Johnston	79
Murray	--	Love	95

$M_1 = 127$ $\quad$ $M_2 = 87.3$

$\sigma_1 = 25.1$ $\quad$ $\sigma_2 = 34.0$

$\sigma_{M_1} = 5.35$ $\quad$ $\sigma_{M_2} = 6.93$

$M_1 - M_2 = 39.9$

$\sigma_{M_1-M_2} = 8.7$

Critical Ratio = 4.58

Level of Significance = 0.01

TABLE XVI

AVERAGE AUTOMOBILE LICENSE FEE COLLECTED PER VEHICLE REGISTERED, 1953, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	21.84	Jackson	19.40
Payne	20.08	Harmon	19.43
Cleveland	20.36	Washita	19.07
Kay	19.85	Rogers	19.14
Tulsa	22.26	Craig	18.06
Washington	21.68	Roger Mills	19.64
Canadian	20.09	Choctaw	17.24
Custer	20.04	Hughes	19.47
Logan	19.35	Beckham	20.48
Muskogee	19.58	Tillman	21.01
Comanche	21.43	Delaware	15.11
Stephens	21.73	Adair	14.76
Woodward	20.97	LeFlore	16.24
Woods	20.16	McCurtain	17.39
Grant	19.74	Greer	18.74
Noble	19.03	Wagoner	17.58
Ottawa	18.86	Haskell	16.33
Kiowa	19.22	Sequoyah	15.90
Alfalfa	20.06	Jefferson	19.09
Garfield	19.32	Coal	16.79
Marshall	18.84	Atoka	16.86
Pottawatomie	19.77	Pushmataha	16.90
Texas	22.54	McIntosh	16.79
Grady	20.01	Johnston	16.83
Murray	20.48	Love	17.67

$M_1 = 20.29$ $\quad$ $M_2 = 17.83$

$\sigma_1 = 1.04$ $\quad$ $\sigma_2 = 1.64$

$\sigma_{M_1} = 0.21$ $\quad$ $\sigma_{M_2} = 0.33$

$M_1 - M_2 = 2.46$

$\sigma_{M_1 - M_2} = 0.39$

Critical Ratio = 6.31

Level of Significance = 0.01

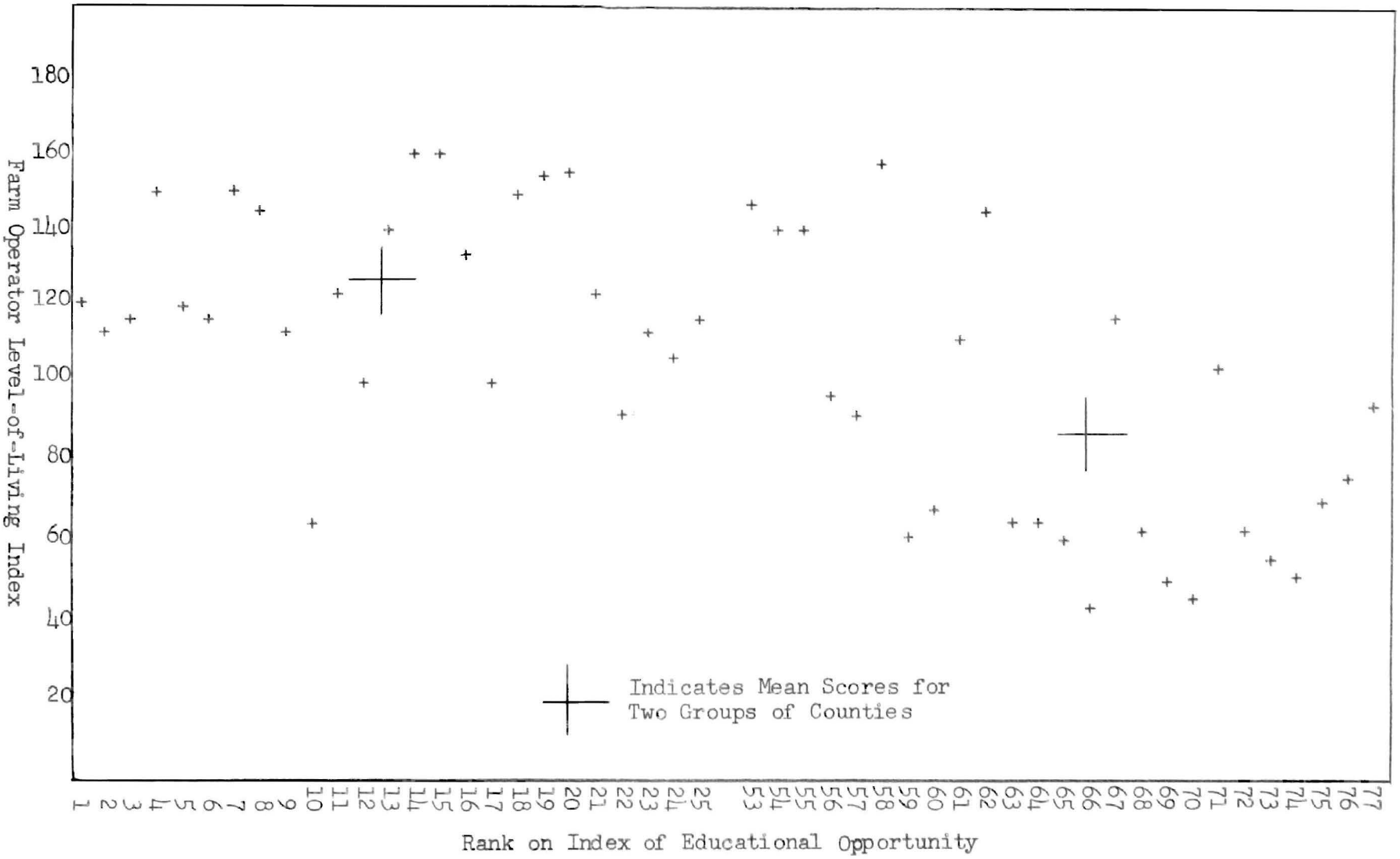

Figure 4. Farm Operator Level-of-Living Index Versus Rank on the Index of Educational Opportunity.

population in the second group of counties. Inasmuch as we have already established that these same counties have automobiles which are, on the average, newer and more costly, the additional 100 automobiles per 1000 of population in the first group of counties would surely represent an important difference in the economic activity of these counties. For example, if we assume the additional automobiles are driven on an average of 10,000 miles per year, that they average twenty miles per gallon of gasoline, and that gasoline sells for thirty cents per gallon: we have an expenditure of $15.00 per person per year for gasoline alone. The example includes many assumptions, but the idea developed would appear valid and the contribution to the economy is no doubt real. The $15.00 per capita is particularly significant when applied to a county with a median family income of less than $900.

The data contained in Tables XVIII through XX may appear redundant, but each measure was included for a particular purpose. Thus Table XVIII gives the total annual sales tax per person and was taken as a measure of the economic activity of the county. Since this may be greatly influenced by such things as heavy implement sales which are frequently made from large cities, Table XIX gives the same data for food sales alone. The latter are almost invariably purchased locally. Of course, the location of a major shopping center near a county line would tend to invalidate the statistics and was undoubtedly partially responsible for some of the extreme values found in Table XIX. This particular statistic is also sensitive to such factors as the urban-rural status of the county and the corresponding change in amounts of

TABLE XVII

NUMBER OF AUTOMOBILE REGISTRATIONS PER 1000 OF POPULATION, 1953, BY COUNTY

County	Registrations	County	Registrations
Oklahoma	318	Jackson	316
Payne	277	Harmon	304
Cleveland	323	Washita	283
Kay	379	Rogers	248
Tulsa	326	Craig	228
Washington	318	Roger Mills	248
Canadian	304	Choctaw	145
Custer	323	Hughes	199
Logan	279	Beckham	360
Muskogee	216	Tillman	294
Comanche	247	Delaware	174
Stephens	315	Adair	147
Woodward	329	LeFlore	170
Woods	351	McCurtain	120
Grant	273	Greer	295
Noble	322	Wagoner	161
Ottawa	311	Haskell	158
Kiowa	329	Sequoyah	150
Alfalfa	353	Jefferson	276
Garfield	311	Coal	160
Marshall	240	Atoka	134
Pottawatomie	285	Pushmataha	116
Texas	374	McIntosh	145
Grady	260	Johnston	146
Murray	287	Love	198

$M_1 = 302.4$ $\quad M_2 = 207$

$\sigma_1 = 41.6$ $\quad \sigma_2 = 70.2$

$\sigma_{M_1} = 8.48$ $\quad \sigma_{M_2} = 14.33$

$M_1 - M_2 = 95.4$

$\sigma_{M_1 - M_2} = 16.7$

Critical Ratio = 5.71

Level of Significance = 0.01

TABLE XVIII

ANNUAL SALES TAX COLLECTED PER CAPITA, 1954, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	27.53	Jackson	14.36
Payne	13.74	Harmon	11.17
Cleveland	10.15	Washita	8.96
Kay	18.09	Rogers	9.54
Tulsa	27.47	Craig	10.36
Washington	18.87	Roger Mills	7.63
Canadian	12.18	Choctaw	7.55
Custer	15.72	Hughes	8.39
Logan	11.85	Beckham	20.99
Muskogee	13.32	Tillman	13.77
Comanche	15.18	Delaware	4.36
Stephens	21.07	Adair	5.89
Woodward	15.30	LeFlore	6.88
Woods	15.85	McCurtain	6.07
Grant	11.29	Greer	11.83
Noble	15.60	Wagoner	6.46
Ottawa	14.24	Haskell	6.23
Kiowa	15.22	Sequoyah	5.00
Alfalfa	12.47	Jefferson	8.69
Garfield	19.90	Coal	7.17
Marshall	8.19	Atoka	5.68
Pottawatomie	13.73	Pushmataha	6.80
Texas	15.67	McIntosh	5.16
Grady	12.52	Johnston	5.33
Murray	11.42	Love	5.86

$M_1 = 15.46$ $\quad$ $M_2 = 8.40$

$\sigma_1 = 4.60$ $\quad$ $\sigma_2 = 4.02$

$\sigma_{M_1} = 0.94$ $\quad$ $\sigma_{M_2} = 0.82$

$M_1 - M_2 = 7.06$

$\sigma_{M_1 - M_2} = 1.25$

Critical Ratio = 5.65

Level of Significance = 0.01

TABLE XIX

ANNUAL SALES TAX COLLECTED ON FOOD SALES, PER CAPITA, 1954, BY CO

County	Dollars	County	Dollars
Oklahoma	5.60	Jackson	3.69
Payne	3.83	Harmon	2.86
Cleveland	3.58	Washita	2.58
Kay	4.97	Rogers	3.39
Tulsa	5.85	Craig	2.34
Washington	4.93	Roger Mills	2.35
Canadian	3.61	Choctaw	3.07
Custer	3.96	Hughes	2.85
Logan	3.51	Beckham	4.82
Muskogee	3.37	Tillman	3.72
Comanche	4.17	Delaware	1.42
Stephens	3.96	Adair	2.37
Woodward	3.37	LeFlore	2.37
Woods	5.07	McCurtain	2.37
Grant	2.58	Greer	3.36
Noble	3.60	Wagoner	1.92
Ottawa	4.16	Haskell	2.09
Kiowa	3.68	Sequoyah	1.57
Alfalfa	3.29	Jefferson	2.68
Garfield	4.56	Coal	2.11
Marshall	2.61	Atoka	2.15
Pottawatomie	3.63	Pushmataha	2.49
Texas	4.56	McIntosh	1.86
Grady	3.41	Johnston	2.47
Murray	4.34	Love	2.47

$M_1 = 4.01$ $\quad$ $M_2 = 2.61$

$\sigma_1 = 0.80$ $\quad$ $\sigma_2 = 0.23$

$\sigma_{M_1} = 0.16$ $\quad$ $\sigma_{M_2} = 0.047$

$M_1 - M_2 = 1.40$

$\sigma_{M_1 - M_2} = 0.517$

Critical Ratio = 2.71

Level of Significance = 0.01

home food production. It is doubted that in this day of canned foods and modern food shopping centers whether such factors could begin to account for the almost two to one ratio of the means. Finally, while the data in Tables XVIII and XIX are indicative of the general economic well-being of the purchaser, the data in Table XX indicates the volume of business per business establishment. In order to minimize the effect of large multipurpose institutions in larger cities, this table was again limited to food sales and gives a more representative picture of the local situation.

Tax figures were used in this particular series of economic indicators since they are more readily obtainable and give rise to numbers which are more easily handled statistically. They are, of course, readily transformable to the corresponding retail sales figure.

Table XVIII gives the mean per capita sales tax reported for counties in the first group as $15.46. This represents a retail sales of approximately $773 which is of the right order of magnitude when compared to a median family income of $2550. The corresponding figure for counties ranking in the lower one-third on the index of educational opportunity was a mean per capita sales tax collection of $8.40 representing retail sales of $420 and a median family income of $1543.

The mean per capita sales tax collections for food in the two groups of counties was $4.01 and $2.61. These figures represent retail sales (food) of $200 and $130.50 respectively. As indicated previously, several factors may affect the absolute validity of these data, but there seems little doubt that part of it must represent real differences in food purchasing ability. Table XX gives means of $64.77 as compared

to $40.22 for the sales tax collections per establishment, per reporting period. Since these tax figures represent retail sales of $3,238.50 as compared to $2,011, it seems obvious that the level of economic activity for businessmen engaged in retail food sales must differ significantly between the two groups of counties. Data such as the above are presented graphically in Figure 5, page 69 which shows annual sales tax per capita plotted against rank on the basis of the index of educational opportunity.

An Analysis of Certain Measures of Savings and Personal Economic Worth

Two indices of savings and personal economic worth were used in this study. Table XXI, page 70, presents the first of these and shows the amount of E-Bond sales per capita in each county. Data is from the U. S. Bureau of the Census. The table shows a range of $11.49 to $35.94 with a mean of $23.44 for counties which ranked in the upper one-third on the index of educational opportunity. The corresponding figures for counties in the lower one-third of the index were $3.18 to $25.84 with a mean value of $10.00. E-Bond sales were selected in preference to bank deposits because of the rather large seasonal fluctuations in the latter data and because E-Bonds which may be secured from several sources are more likely to represent the truly local situation. Some of the differences between the two groups may surely be accounted for by such factors as the location of banking and marketing communities near county lines. However, it should be noted that each group contains 25 counties and that the variations are noted not only between counties,

TABLE XX

SALES TAX COLLECTED ON FOOD SALES PER BUSINESS ESTABLISHMENT PER REPORTING PERIOD, 1954, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	88.02	Jackson	51.80
Payne	76.09	Harmon	42.64
Cleveland	83.18	Washita	61.41
Kay	83.41	Rogers	41.60
Tulsa	91.10	Craig	40.91
Washington	76.73	Roger Mills	32.34
Canadian	70.54	Choctaw	41.94
Custer	60.07	Hughes	43.99
Logan	52.24	Beckham	58.49
Muskogee	47.88	Tillman	53.49
Comanche	77.02	Delaware	26.05
Stephens	61.08	Adair	39.42
Woodward	57.30	LeFlore	35.51
Woods	81.62	McCurtain	38.91
Grant	44.15	Greer	46.27
Noble	59.23	Wagoner	35.41
Ottawa	51.29	Haskell	39.76
Kiowa	51.90	Sequoyah	31.95
Alfalfa	58.22	Jefferson	41.22
Garfield	91.78	Coal	43.60
Marshall	36.04	Atoka	31.16
Pottawatomie	48.49	Pushmataha	33.43
Texas	81.30	McIntosh	29.94
Grady	48.08	Johnston	37.83
Murray	41.69	Love	26.54

$M_1 = 64.74$ $\quad M_2 = 40.22$

$\sigma_1 = 16.66$ $\quad \sigma_2 = 8.88$

$\sigma_{M_1} = 3.40$ $\quad \sigma_{M_2} = 1.81$

$M_1 - M_2 = 24.52$

$\sigma_{M_1 - M_2} = 3.85$

Critical Ratio = 6.37

Level of Significance = 0.01

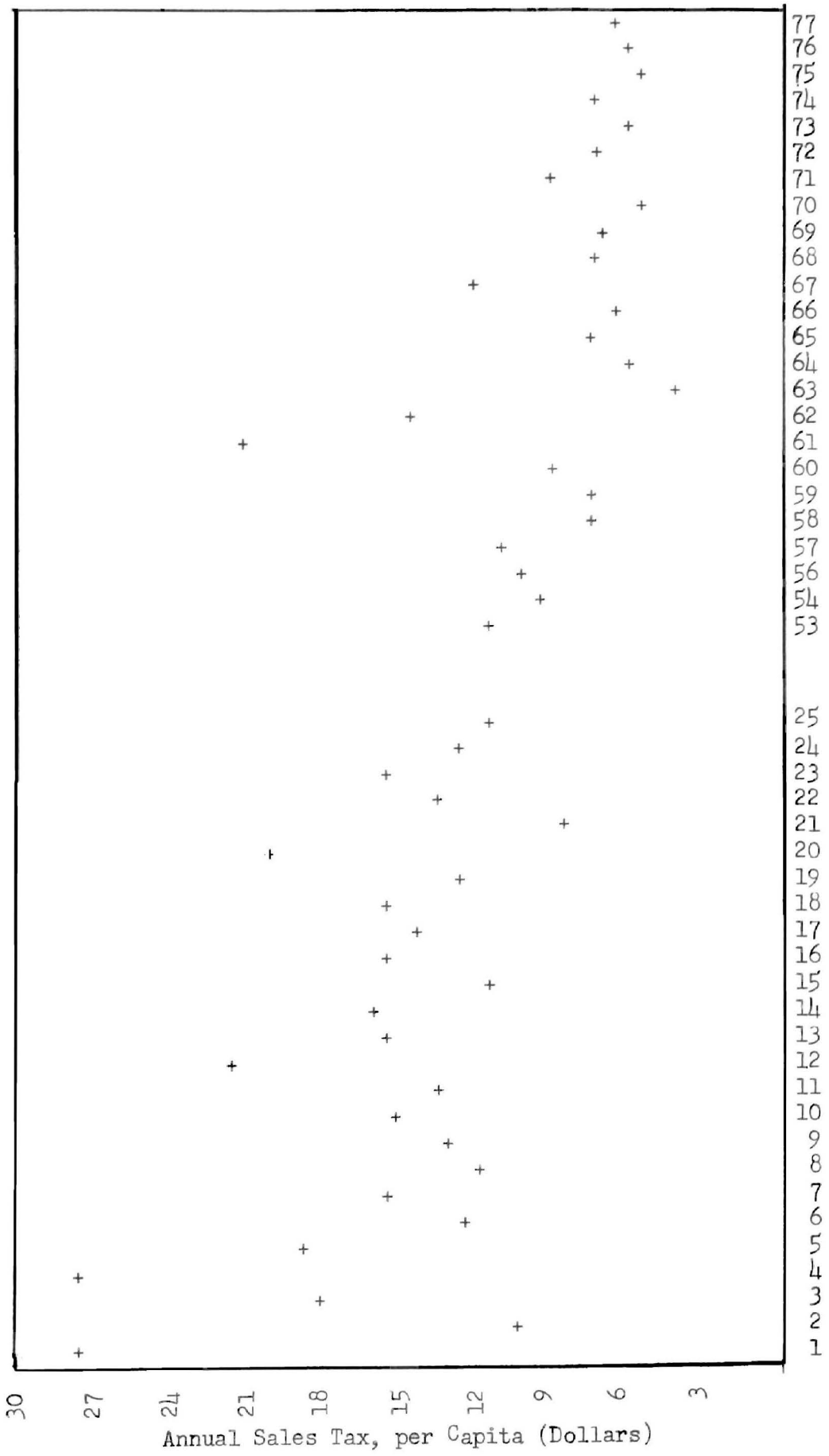

Figure 5. Annual Sales Tax per Capita (Dollars) Versus Rank on Index of Educational Opportunity

TABLE XXI

ANNUAL E-BOND SALES, PER CAPITA, 1950, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	30.31	Jackson	24.84
Payne	21.77	Harmon	20.79
Cleveland	18.29	Washita	10.98
Kay	34.03	Rogers	11.16
Tulsa	31.48	Craig	13.90
Washington	35.94	Roger Mills	6.62
Canadian	23.00	Choctaw	9.80
Custer	16.54	Hughes	10.16
Logan	18.71	Beckham	14.14
Muskogee	13.25	Tillman	19.09
Comanche	21.62	Delaware	4.20
Stephens	21.19	Adair	7.17
Woodward	19.32	LeFlore	8.27
Woods	22.99	McCurtain	5.50
Grant	29.15	Greer	20.59
Noble	31.42	Wagoner	5.19
Ottawa	23.12	Haskell	4.28
Kiowa	23.93	Sequoyah	3.18
Alfalfa	21.12	Jefferson	12.76
Garfield	31.90	Coal	4.09
Marshall	11.49	Atoka	5.32
Pottawatomie	17.90	Pushmataha	4.99
Texas	32.66	McIntosh	7.68
Grady	19.44	Johnston	5.09
Murray	15.49	Love	9.32

$M_1 = 23.44$ $\quad$ $M_2 = 10.00$

$\sigma_1 = 6.7$ $\quad$ $\sigma_2 = 5.98$

$\sigma_{M_1} = 1.37$ $\quad$ $\sigma_{M_2} = 1.22$

$M_1 - M_2 = 13.44$

$\sigma_{M_1 - M_2} = 1.84$

Critical Ratio = 7.30

Level of Significance = 0.01

but also within each group. These variations are invariably correlated positively to the index of educational opportunity.

Table XXII, page 72, indicates the value of land and buildings per farm for each county used in the study. The means of the two groups are $18,650 and $9,820. The critical ratio for the difference between means is 3.30 and is the second lowest found in this study. The lowest critical ratio found was 2.71 for annual sales tax on food sales per capita. That the lowest critical ratios were found in these areas is understandable. There would seem to be a minimum food requirement and quite possibly a maximum also. Similarly, a farm, to be a farm, must meet certain minimum requirements and the result is a decrease in the diversity between the two groups being compared.

An Analysis of Certain Miscellaneous Indicators of Economic Well-Being

One of the major expenses of a state government is that of caring for its dependent citizens. Tables XXII, XXIII, and XXIV show some of the data concerned with this problem for Oklahoma and for each of the counties in the study. All three tables include expenses for care of the aged, the disabled, and the dependent children.

Table XXIII, page 75, indicates that the per cent of the population receiving public assistanoe ranges from 2.2 per cent to 12.7 per cent with a mean of 5.96 per cent for the group of counties that ranked highest on the index of educational opportunity. The range was from 5.2 per cent to 18.9 per cent with a mean of 12.6 per cent for the second group of counties. Again the ratio of the two means was seen to

TABLE XXII

VALUE OF LAND AND BUILDINGS PER FARM, 1950, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	13,955	Jackson	20,773
Payne	8,895	Harmon	18,786
Cleveland	12,358	Washita	19,140
Kay	21,459	Rogers	8,827
Tulsa	13,880	Craig	8,527
Washington	14,118	Roger Mills	16,487
Canadian	26,029	Choctaw	3,689
Custer	20,458	Hughes	5,113
Logan	12,626	Beckham	14,132
Muskogee	6,348	Tillman	32,863
Comanche	15,595	Delaware	5,151
Stephens	9.373	Adair	3,862
Woodward	22,626	LeFlore	3,716
Woods	29,529	McCurtain	3,317
Grant	30,864	Greer	15,271
Noble	17,838	Wagoner	8,528
Ottawa	8,095	Haskell	3,464
Kiowa	23,752	Sequoyah	3,545
Alfalfa	34,712	Jefferson	15,200
Garfield	30,615	Coal	5,776
Marshall	10,900	Atoka	3,911
Pottawatomie	7,318	Pushmataha	3,086
Texas	53,770	McIntosh	4,804
Grady	11,398	Johnston	9,329
Murray	10,746	Love	8,193

$M_1 = 18,650$ $\quad M_2 = 9,820$

$\sigma_1 = 10,830$ $\quad \sigma_2 = 7,336$

$\sigma_{M_1} = 2,210$ $\quad \sigma_{M_2} = 1,497$

$M_1 - M_2 = 8,830$

$\sigma_{M_1 - M_2} = 2,669$

Critical Ratio = 3.30

Level of Significance = 0.01

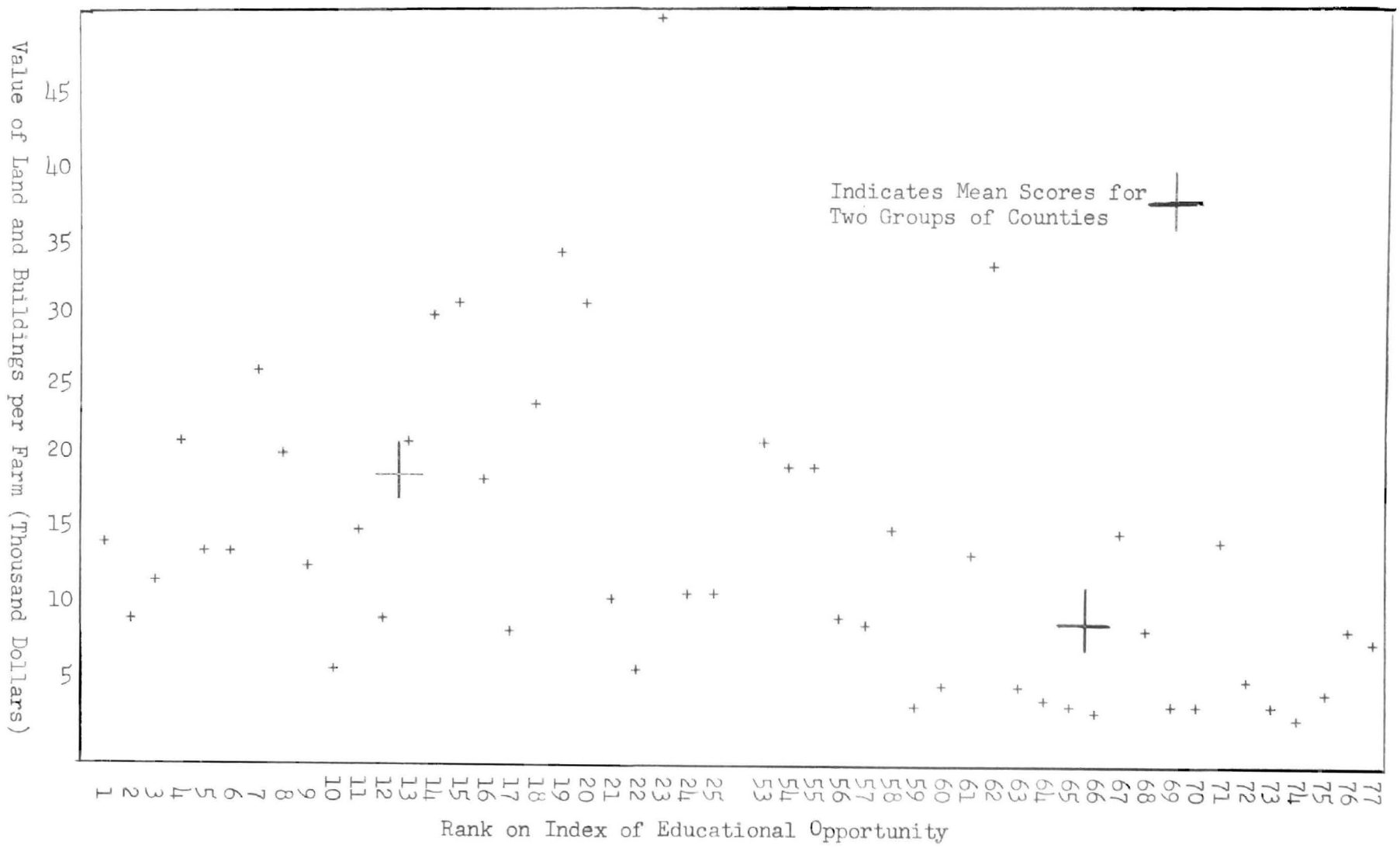

Figure 6. Value of Land and Buildings Per Farm (Thousands of Dollars) Versus Rank on Index of Educational Opportunity

be larger than two to one. However, this is not the total story. Table XXIV, page 76, shows that not only does the percentage of population receiving public assistance vary greatly, but the obligation incurred for each individual varies also. In general those counties with a high per cent of their population on assistance rolls will show a larger obligation incurred for each individual case. Thus the total load of supporting these individuals increases rapidly. The mean obligation incurred for assistance rolls per member of the population is $26.84 for the one group of counties and $54.57 for the second. Since the ratio of the means is again approximately two to one, the assistance load between the two groups of counties would be approximately four to one if each county were to care for its own dependents.

Obviously, this is impossible and the counties in better economic condition are called upon to help support those in poorer condition. The result is shown in Table XXV, page 77. This table gives the dollars returned to each county for assistance rolls per dollar collected in the county for these purposes. The range for the twenty-five counties in the first group was from $0.70 to $5.21 with a mean of $2.21. The corresponding figure for the other twenty-five counties was a range from $2.82 to $14.94 with a mean of $8.17. As was anticipated earlier, the ratio of these mean values is nearly four to one.

Further analysis shows that five of the first set of counties support their own welfare rolls and contribute to the support of others. None of the counties in the second set provide sufficient revenue for their own assistance rolls. These circumstances are demonstrated in Figure 7, page 78, which shows the number of dollars returned to each

TABLE XXIII

PER CENT OF COUNTY POPULATION RECEIVING PUBLIC ASSISTANCE, JUNE, 1954, BY COUNTY

County	Per Cent	County	Per Cent
Oklahoma	3.8	Jackson	7.7
Payne	3.8	Harmon	8.3
Cleveland	2.6	Washita	5.2
Kay	4.5	Rogers	9.2
Tulsa	4.0	Craig	7.7
Washington	3.2	Roger Mills	7.3
Canadian	4.3	Choctaw	18.6
Custer	6.0	Hughes	16.5
Logan	9.4	Beckham	7.9
Muskogee	10.3	Tillman	8.0
Comanche	3.4	Delaware	14.7
Stephens	6.6	Adair	16.5
Woodward	4.5	LeFlore	14.2
Woods	3.8	McCurtain	17.2
Grant	3.1	Greer	9.1
Noble	6.0	Wagoner	15.5
Ottawa	8.5	Haskell	12.7
Kiowa	8.0	Sequoyah	18.9
Alfalfa	4.3	Jefferson	13.8
Garfield	3.3	Coal	12.7
Marshall	11.4	Atoka	15.2
Pottawatomie	9.1	Pushmataha	14.7
Texas	2.2	McIntosh	17.2
Grady	10.3	Johnston	15.8
Murray	12.7	Love	10.4

$M_1 = 5.96$ $\quad$ $M_2 = 12.60$

$\sigma_1 = 3.03$ $\quad$ $\sigma_2 = 4.04$

$\sigma_{M_1} = 0.62$ $\quad$ $\sigma_{M_2} = 0.82$

$M_1 - M_2 = 6.64$

$\sigma_{M_1 - M_2} = 1.03$

Critical Ratio = 6.45

Level of Significance = 0.01

TABLE XXIV

OBLIGATIONS INCURRED BY THE STATE FOR PUBLIC ASSISTANCE PER CAPITA, 1953, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	14.98	Jackson	30.44
Payne	18.98	Harmon	28.75
Cleveland	13.13	Washita	19.33
Kay	21.85	Rogers	48.70
Tulsa	19.47	Craig	43.43
Washington	20.44	Roger Mills	27.92
Canadian	20.34	Choctaw	80.74
Custer	24.02	Hughes	57.23
Logan	43.33	Beckham	30.09
Muskogee	42.11	Tillman	34.05
Comanche	17.09	Delaware	64.10
Stephens	33.63	Adair	63.38
Woodward	20.01	LeFlore	54.56
Woods	20.55	McCurtain	73.06
Grant	16.97	Greer	34.51
Noble	26.07	Wagoner	57.68
Ottawa	37.32	Haskell	55.09
Kiowa	29.63	Sequoyah	69.98
Alfalfa	19.16	Jefferson	48.19
Garfield	17.17	Coal	62.47
Marshall	50.74	Atoka	64.63
Pottawatomie	41.48	Pushmataha	62.95
Texas	10.05	McIntosh	59.23
Grady	37.75	Johnston	68.35
Murray	54.86	Love	50.37

$M_1 = 26.84$ $\quad$ $M_2 = 51.57$

$\sigma_1 = 11.17$ $\quad$ $\sigma_2 = 16.14$

$\sigma_{M_1} = 2.28$ $\quad$ $\sigma_{M_2} = 3.29$

$M_1 - M_2 = 24.73$

$\sigma_{M_1 - M_2} = 4.01$

Critical Ratio = 6.17

Level of Significance = 0.01

TABLE XXV

DOLLARS RETURNED TO THE COUNTY PER DOLLAR COLLECTED FOR PURPOSES OF PUBLIC ASSISTANCE, 1953, BY COUNTY

County	Dollars	County	Dollars
Oklahoma	0.72	Jackson	2.82
Payne	1.56	Harmon	4.50
Cleveland	1.43	Washita	3.13
Kay	1.30	Rogers	4.32
Tulsa	0.70	Craig	3.85
Washington	0.90	Roger Mills	6.05
Canadian	1.92	Choctaw	12.54
Custer	2.03	Hughes	7.14
Logan	3.81	Beckham	2.83
Muskogee	3.65	Tillman	3.01
Comanche	1.09	Delaware	12.29
Stephens	1.49	Adair	10.87
Woodward	1.81	LeFlore	9.02
Woods	1.56	McCurtain	12.96
Grant	1.46	Greer	5.05
Noble	1.71	Wagoner	8.20
Ottawa	3.03	Haskell	9.73
Kiowa	3.15	Sequoyah	14.94
Alfalfa	1.89	Jefferson	7.35
Garfield	0.99	Coal	9.43
Marshall	6.35	Atoka	10.29
Pottawatomie	2.85	Pushmataha	10.58
Texas	0.95	McIntosh	10.77
Grady	3.79	Johnston	13.18
Murray	5.21	Love	9.41

$M_1 = 2.21$ $\quad$ $M_2 = 8.17$

$\sigma_1 = 1.41$ $\quad$ $\sigma_2 = 3.65$

$\sigma_{M_1} = 0.28$ $\quad$ $\sigma_{M_2} = 0.74$

$M_1 - M_2 = 5.96$

$\sigma_{M_1 - M_2} = 0.79$

Critical Ratio = 7.54

Level of Significance = 0.01

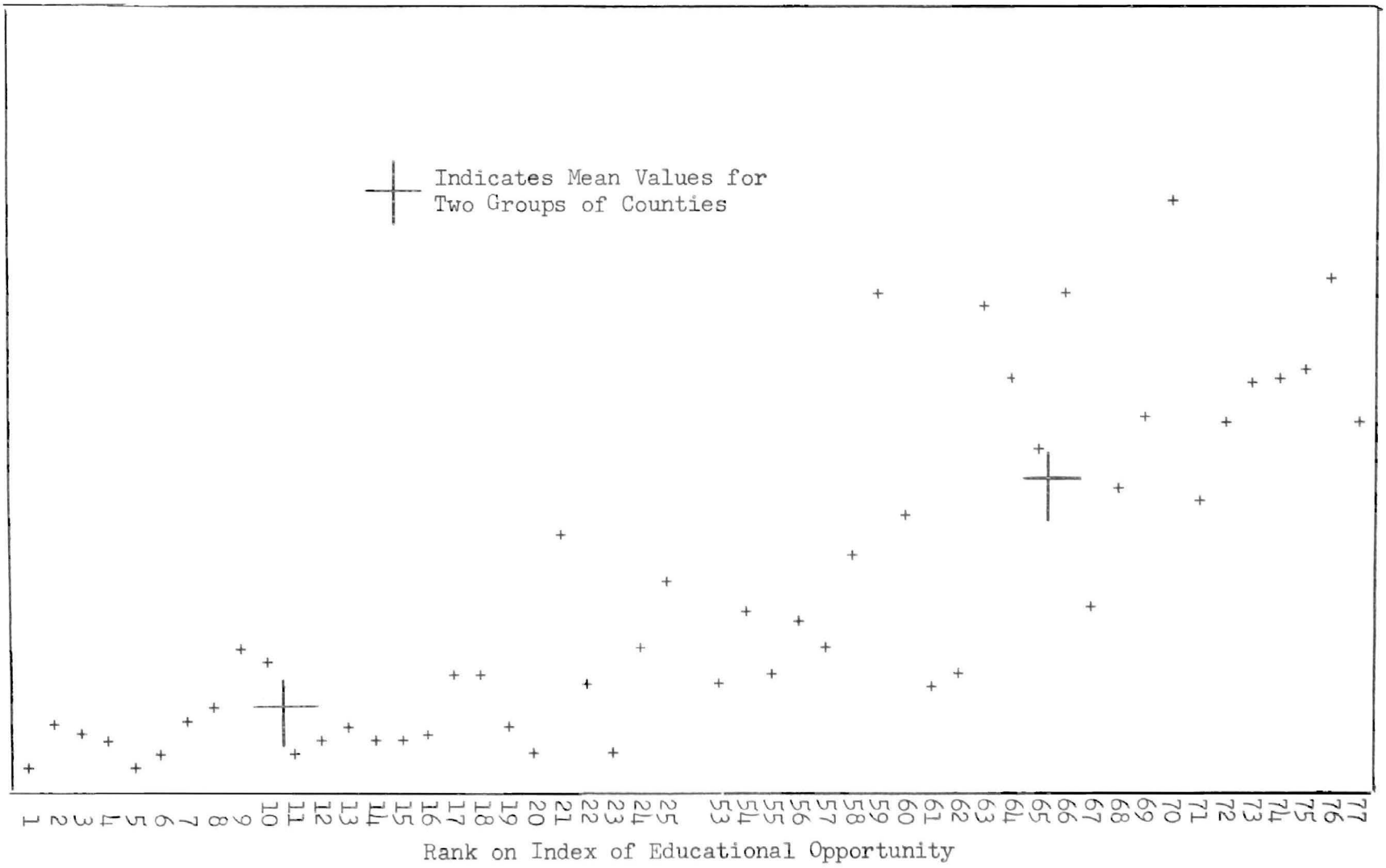

Figure 7. Dollars Returned to County for Public Assistance per Dollar Collected Versus Rank on Index of Educational Opportunity

county per dollar collected for purposes of public assistance. Figure 8, page 80, gives the per cent of population of the public assistance rolls for each of the counties. Both sets of data are plotted against rank on the index of educational opportunity.

Ever since the release of the preliminary reports of the 1950 census, Oklahomans have been concerned with the state's loss of population. Many reasons for this loss have been identified and many solutions to the problem have been proposed. It seems quite likely that one reason for a major shift in population would be the lack of economic opportunity and desire to improve economic well-being. It is not the purpose of this study to establish this thesis, but some of the data tend to support it and are so related to the problem under study that they warrant attention.

Table XXVI, page 81, shows the loss or gain of population for the various counties used in the study. The mean gain or loss of population for counties ranking high educationally is a gain of 1.7 per cent while the corresponding figure for the other group of counties is a loss of 21.9 per cent. Of the eleven counties in Oklahoma which did show a gain of population between 1940 and 1950, ten were in the upper one-third on the index of educational opportunity. None were found in the lower one-third: all of these counties lost population and most lost heavily. These data are presented graphically in Figure 9, page 82.

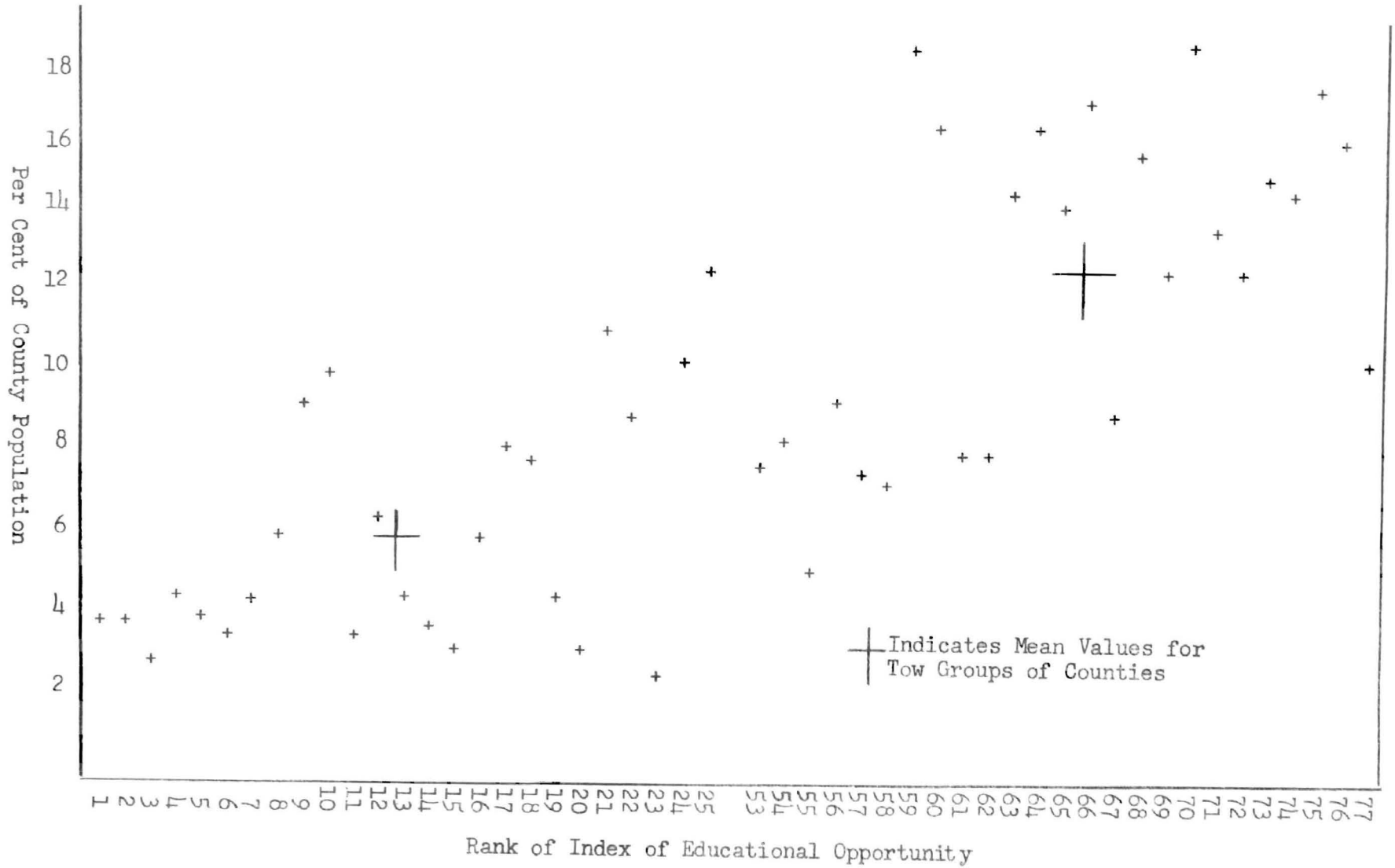

Figure 8. Per Cent of County Population on Welfare Rolls Versus Rank on Index of Educational Opportunity

TABLE XXVI

PER CENT OF POPULATION INCREASE (+) OR DECREASE (-) FROM 1940 TO 1950, BY COUNTY

County	Per Cent	County	Per Cent
Oklahoma	33.3	Jackson	-11.6
Payne	28.8	Harmon	-19.4
Cleveland	49.5	Washita	-20.7
Kay	3.8	Rogers	- 7.3
Tulsa	30.2	Craig	-13.4
Washington	7.6	Roger Mills	-31.1
Canadian	- 6.2	Choctaw	-28.0
Custer	- 8.5	Hughes	-29.2
Logan	-12.2	Beckham	- 2.4
Muskogee	- 0.5	Tillman	-15.2
Comanche	41.5	Delaware	-20.8
Stephens	9.6	Adair	- 5.3
Woodward	-11.6	LeFlore	-23.1
Woods	- 2.6	McCurtain	-23.5
Grant	-20.3	Greer	-19.3
Noble	-18.0	Wagoner	-22.6
Ottawa	-10.1	Haskell	-23.2
Kiowa	-17.1	Sequoyah	-14.5
Alfalfa	-24.3	Jefferson	-26.4
Garfield	16.1	Coal	-37.1
Marshall	-34.0	Atoka	-23.7
Pottawatomie	-20.0	Pushmataha	-38.3
Texas	43.8	McIntosh	-26.0
Grady	-15.2	Johnston	-33.5
Murray	-22.2	Love	-32.5

$M_1 = 1.7$ $\qquad$ $M_2 = -21.9$

$\sigma_1 = 23.4$ $\qquad$ $\sigma_2 = 9.3$

$\sigma_{M_1} = 4.77$ $\qquad$ $\sigma_{M_2} = 1.82$

$M_1 - M_2 = 23.6$

$\sigma_{M_1 - M_2} = 5.1$

Critical Ratio = 4.62

Level of Significance = 0.01

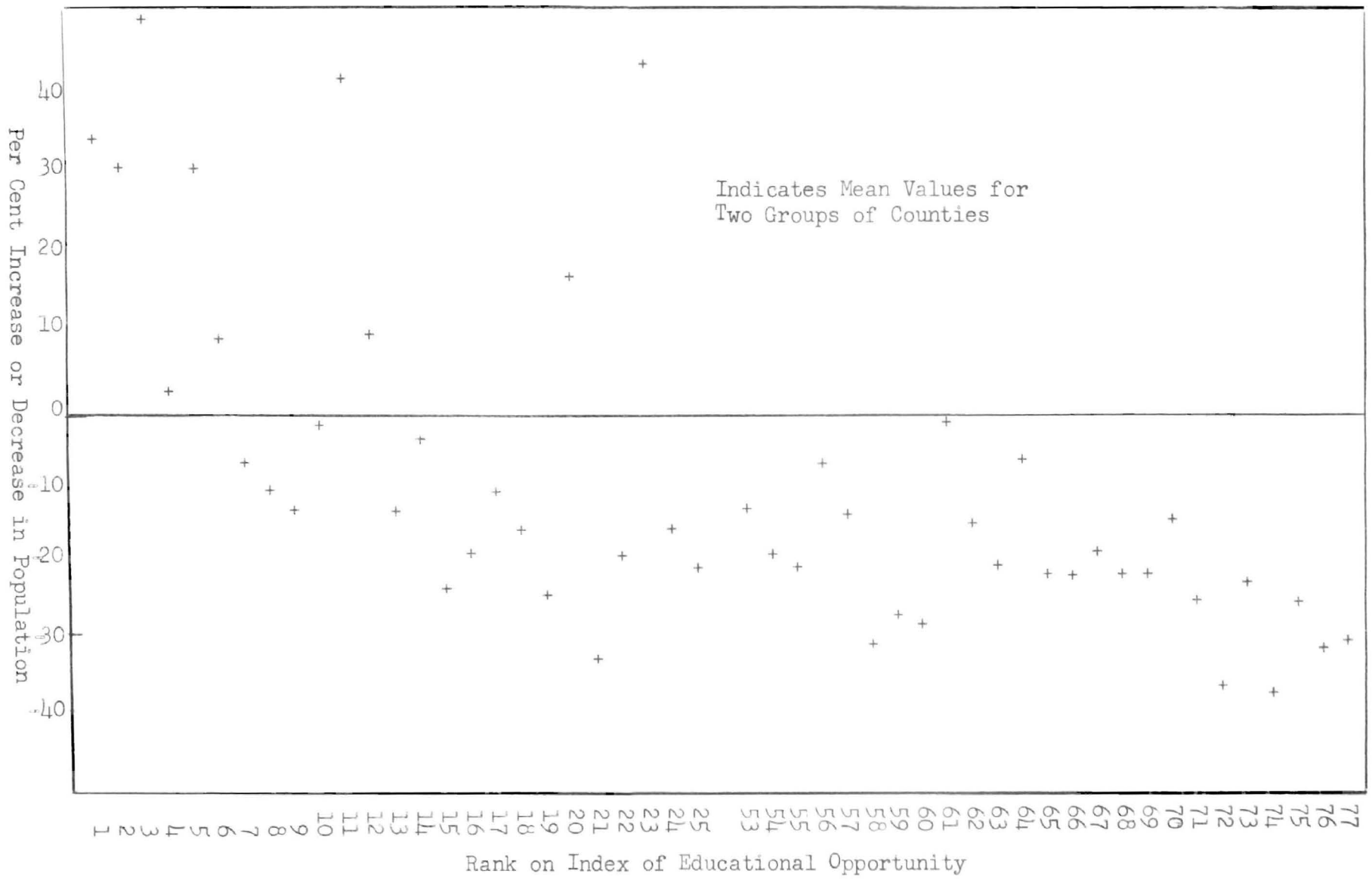

Figure 9. Population Increase or Decrease (1940 to 1950) Versus Rank on Index of Educational Opportunity

SUMMARY

In Chapter II, an index of educational opportunity was developed and the counties of Oklahoma ranked on the basis of this index. The counties for study were divided into two groups consisting of those ranking in the upper and lower one-thirds on the basis of this index.

In Chapter III, the mean scores of these two groups on certain measures of economic well-being were determined and the significance of the difference between these means was determined by application of the "t-test". In all cases, the evidence was that those counties which ranked high on the index of educational opportunity scored significantly higher than the second group when compared on the measures of economic well-being. In all cases, the difference between means of the two groups was found to be significant at the 0.01 level.

Chapter III revealed a significant relationship between the educational opportunity present in an Oklahoma county and the economic well-being of the people of that county. Those counties which have a higher standard of public education, on the basis of the index of educational opportunity as defined in this study, were seen to have higher income levels, more and newer automobiles, and better homes which were equipped with more of the things which make living easier. They spend more money, per capita, for retail purchases, have more to spend for foods, and these conditions are reflected in a higher sales volume per business establishment and a higher level of economic activity within the county. These same counties were seen to have a larger per capita savings and personal worth as shown by records of E-Bond sales and value of land and buildings owned.

Meanwhile, counties which ranked lower on the index of educational opportunity were found to have less of the good things of life. They had a larger percentage of their population on welfare rolls and each person on the welfare rolls received larger amounts of public assistance. The welfare load was almost four times as high in the second group of counties as in the first. The two groups of counties were also seen to vary greatly when considered on the basis of the stability of their populations. The group of counties ranking low in educational opportunity lost a significantly larger proportion of their population during the 1940-1950 decade.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

Almost from the beginning of the American democracy, it has been an accepted part of our tradition that education is a good; that is, education contributes something which is valued to the educatee and to the society which is represented by the educator. This belief in education as an inherent good and as a force for individual and social up-lifting was for many years accepted on the basis of faith and simple observation. However, in the nineteenth century, along with the general social-technical awakening known as the industrial revolution, a more inquiring attitude developed toward many of the fundamental assumptions of a few decades earlier. Among the many questions asked were: Is education always good for society and for the individual? Does the improvement and strengthening of our national economy necessarily involve an improved program of public education? What is the optimum amount that society should invest in education?

As a result of such questions, educational leaders found it necessary to look more carefully at the basic principles and structures of free public education. Faith and observation were replaced by planned experimental investigation as a basis for establishing the worth of education. Numerous research studies were developed which clearly

established the relationship between educational attainment and subsequent economic well-being of the individual. Even more important, however, was an understanding of the relationship between educational opportunity and the economic well-being of the society. It is this relationship which served as the subject of the present research. More specifically the study seeks to shed some light on the following questions: (1) what differences in educational opportunity and economic well-being exist among the various counties of Oklahoma and (2) to what extent are differences in educational opportunity and economic well-being related in the various counties of Oklahoma.

The study was completed in three major phases. First, an index of educational opportunity was developed and the index applied to each of the counties of Oklahoma. The index was based on teacher salaries, per cent of school age population in school, number of Carnegie units of instruction offered, and similar data. Second, items were identified which were indicative of the economic well-being of each county and data were collected for each item. These items included such factors as savings, value of farm land and buildings, incomes, levels-of-living, and per cent of populations on welfare rolls. Finally, the counties ranking in the upper one third and the counties ranking in the lower one-third on the index of educational opportunity were compared to determine the relative economic well-being of their populations and the significance of any differences found in the levels of well-being of the two groups. Data for the study were selected from numerous publications of federal and state agencies, particularly from publications of the U. S. Bureau of the Census and the State Department of Education of Oklahoma.

Conclusions and Recommendations

The results of the study show a significant relationship between educational opportunity and the level of economic well-being in the various counties of Oklahoma for each of the seventeen indexes of economic well-being selected. Those counties with a high level of educational opportuntiy were invariably found to have a higher level-of-living, a larger personal income, a greater net worth, and more annual savings than those counties with a lower level of educational opportunity. When the two groups of counties were compared on the basis of the seventeen indicators of economic well-being, the difference between means for the two groups was found to be significant at the 0.01 level in each case. As a result, one is led to conclude that there is a significant difference between the levels of economic well being of counties ranking high and those ranking low on an index of educational opportunity and the null hypothesis originally formulated in Chapter I must be rejected. Further, while it was not the purpose of this study to investigate the causal nature of the relationship found, the evidence strongly suggests the existence of a cause and effect relationship between the two variables.

From the findings in this study, the following recommendations are offered:

1. More adequate criteria for measuring educational opportunity in terms of the immediate classroom situation and the products of the educational process should be developed.

2. A study should be made of the relationship between educational opportunity and economic well-being on the basis of these criteria. Such a study could be limited to a smaller sample of counties, measure educational opportunity more rigorously, correct for extraneous results due to variations in population density, rural-urban influences and natural resources thus yielding more information on the casual nature of the relationship found.

3. A study should be made of the chronological relationship between educational opportunity and economic well-being specifically, the time lapse between improved educational opportunity in a society and material returns in the form of an improved economic well-being of the society.

4. A study should be made to determine the optimum level of school support (educational opportunity) which may reasonably be expected to result in a return in increased goods and services to the society greater than the cost of the increased level of school support

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APPENDIX

Data Used in the Development of an Index of Educational Opportunity

TABLE XXVII

POPULATION OF THE STATE OF OKLAHOMA, 1940, BY COUNTY[1]

County	Population	County	Population
Adair	15,755	LeFlore	45,866
Alfalfa	14,129	Lincoln	29,529
Atoka	18,702	Logan	25,245
Beaver	8,648	Love	11,433
Beckham	22,169	McClain	19,205
Blaine	18,543	McCurtain	41,318
Bryan	35,138	McIntosh	24,097
Caddo	41,567	Major	11,946
Canadian	27,329	Marshall	12,384
Carter	43,292	Mayes	21,668
Cherokee	21,030	Murray	13,841
Choctaw	28,358	Muskogee	65,914
Cimarron	3,654	Noble	14,826
Cleveland	27,728	Nowata	15,774
Coal	12,811	Okfuskee	26,279
Comanche	38,988	Oklahoma	244,159
Cotton	12,884	Okmulgee	50,101
Craig	21,083	Osage	41,502
Creek	55,503	Ottawa	35,849
Custer	23,068	Pawnee	17,395
Delaware	18,592	Payne	36,057
Dewey	11,981	Pittsburg	48,895
Ellis	8,466	Pontotoc	39,792
Garfield	45,484	Pottawatomie	54,377
Garvin	31,150	Pushmataha	19,466
Grady	41,116	Roger Mills	10,736
Grant	13,128	Rogers	21,078
Greer	14,550	Seminole	61,201
Harmon	10,019	Sequoyah	23,138
Harper	6,454	Stephens	31,090
Haskell	17,324	Texas	9,896
Hughes	29,189	Tillman	20,754
Jackson	22,708	Tulsa	193,363
Jefferson	15,107	Wagoner	21,642
Johnston	15,960	Washington	30,559
Kay	47,084	Washita	22,279
Kingfisher	15,617	Woods	14,915
Kiowa	22,817	Woodward	16,270
Latimer	12,380		

[1]U. S. Bureau of the Census, Seventeenth Decennial Census of the U.S., Part 36 (Washington, D. C., 1950).

TABLE XXVIII

POPULATION OF THE STATE OF OKLAHOMA, 1950, BY COUNTY[2]

County	Population	County	Population
Adair	14,918	LeFlore	35,276
Alfalfa	10,699	Lincoln	22,102
Atoka	14,269	Logan	22,170
Beaver	7,411	Love	7,721
Beckham	21,627	McClain	14,681
Blaine	15,049	McCurtain	31,588
Bryan	28,999	McIntosh	17,829
Caddo	34,913	Major	10,279
Canadian	25,644	Marshall	8,177
Carter	36,455	Mayes	19,743
Cherokee	18,989	Murray	10,775
Choctaw	20,405	Muskogee	65,573
Cimarron	4,589	Noble	12,156
Cleveland	41,443	Nowata	12,734
Coal	8,056	Okfuskee	16,948
Comanche	55,165	Oklahoma	325,352
Cotton	10,180	Okmulgee	44,561
Craig	18,263	Osage	33,071
Creek	43,143	Ottawa	32,218
Custer	21,097	Pawnee	13,616
Delaware	14,734	Payne	46,430
Dewey	8,789	Pittsburg	41,031
Ellis	7,326	Pontotoc	30,875
Garfield	52,820	Pottawatomie	43,517
Garvin	29,500	Pushmataha	12,001
Grady	34,872	Roger Mills	7,395
Grant	10,461	Rogers	19,532
Greer	11,749	Seminole	40,672
Harmon	8,079	Sequoyah	19,773
Harper	5,977	Stephens	34,071
Haskell	13,313	Texas	14,235
Hughes	20,664	Tillman	17,598
Jackson	20,082	Tulsa	251,686
Jefferson	11,122	Wagoner	16,741
Johnston	10,608	Washington	32,880
Kay	48,892	Washita	17,657
Kingfisher	12,860	Woods	14,526
Kiowa	18,926	Woodward	14,383
Latimer	9,690		

[2]U. S. Bureau of the Census, County and City Data Book (Washington, D. C., 1957), p. 234.

TABLE XXVIX

AVERAGE DAILY ATTENDANCE, WHITE AND NEGRO SCHOOLS, BY COUNTIES FOR THE 1953-1954 SCHOOL YEAR[3]

County	Attendance	County	Attendance
Adair	3,380	LeFlore	6,630
Alfalfa	1,829	Lincoln	4,471
Atoka	2,611	Logan	5,909
Beaver	1,328	Love	1,595
Beckham	3,997	McClain	2,921
Blaine	3,074	McCurtain	6,977
Bryan	5,598	McIntosh	3,708
Caddo	7,184	Major	1,734
Canadian	4,048	Marshall	1,560
Carter	8,217	Mayes	4,500
Cherokee	3,542	Murray	2,180
Choctaw	3,841	Muskogee	12,385
Cimarron	927	Noble	2,316
Cleveland	6,012	Nowata	2,765
Coal	1,383	Okfuskee	3,466
Comanche	10,486	Oklahoma	64,601
Cotton	2,073	Okmulgee	6,382
Craig	2,815	Osage	5,622
Creek	8,542	Ottawa	6,385
Custer	4,097	Pawnee	2,479
Delaware	4,059	Payne	6,696
Dewey	1,895	Pittsburg	8,346
Ellis	1,313	Pontotoc	5,853
Garfield	8,449	Pottawatomie	8,358
Garvin	6,273	Pushmataha	2,392
Grady	6,643	Roger Mills	1,102
Grant	1,862	Rogers	4,384
Greer	1,993	Seminole	7,074
Harmon	1,462	Sequoyah	4,906
Harper	1,160	Stephens	7,914
Haskell	2,599	Texas	2,674
Hughes	4,124	Tillman	3,613
Jackson	3,741	Tulsa	53,334
Jefferson	2,162	Wagoner	3,439
Johnston	2,266	Washington	6,681
Kay	9,343	Washita	2,826
Kingfisher	2,214	Woods	2,498
Kiowa	3,516	Woodward	2,454
Latimer	1,815		

[3]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report (Oklahoma City, 1954), p. 318.

TABLE XXX

NUMBER OF HIGH-SCHOOL DISTRICTS, BY COUNTY, FOR THE 1953-1954 SCHOOL YEAR[4]

County	Districts	County	Districts
Adair	4	LeFlore	15
Alfalfa	10	Lincoln	11
Atoka	5	Logan	6
Beaver	6	Love	7
Beckham	11	McClain	8
Blaine	10	McCurtain	9
Bryan	15	McIntosh	8
Caddo	17	Major	5
Canadian	7	Marshall	2
Carter	13	Mayes	6
Cherokee	2	Murray	5
Choctaw	6	Muskogee	13
Cimarron	5	Noble	7
Cleveland	4	Nowata	6
Coal	5	Okfuskee	9
Comanche	9	Oklahoma	12
Cotton	5	Okmulgee	12
Craig	7	Osage	16
Creek	14	Ottawa	7
Custer	8	Pawnee	7
Delaware	6	Payne	9
Dewey	7	Pittsburg	13
Ellis	5	Pontotoc	11
Garfield	13	Pottawatomie	15
Garvin	9	Pushmataha	7
Grady	16	Roger Mills	5
Grant	9	Rogers	8
Greer	9	Seminole	15
Harmon	6	Sequoyah	7
Harper	5	Stephens	9
Haskell	4	Texas	9
Hughes	11	Tillman	11
Jackson	12	Tulsa	15
Jefferson	10	Wagoner	6
Johnston	11	Washington	6
Kay	6	Washita	13
Kingfisher	9	Woods	7
Kiowa	10	Woodward	8
Latimer	4		

[4]Ibid., p. 302.

TABLE XXXI

PER CENT OF COUNTY POPULATION 14-17 YEARS OF AGE ENROLLED IN SCHOOL, 1949-1950[5]

County	Per Cent	County	Per Cent
Adair	80.3	LeFlore	82.2
Alfalfa	95.3	Lincoln	86.7
Atoka	76.7	Logan	87.7
Beaver	92.4	Love	82.8
Beckham	82.1	McClain	86.9
Blaine	90.6	McCurtain	81.1
Bryan	88.2	McIntosh	79.7
Caddo	85.6	Major	86.9
Canadian	89.0	Marshall	86.1
Carter	87.6	Mayes	87.5
Cherokee	77.5	Murray	85.2
Choctaw	85.9	Muskogee	87.7
Cimarron	----	Noble	96.3
Cleveland	90.1	Nowata	90.6
Coal	84.6	Okfuskee	86.6
Comanche	79.3	Oklahoma	88.5
Cotton	87.0	Okmulgee	83.7
Craig	83.1	Osage	88.2
Creek	89.9	Ottawa	83.4
Custer	86.3	Pawnee	88.1
Delaware	86.9	Payne	86.6
Dewey	98.0	Pittsburg	83.3
Ellis	----	Pontotoc	86.5
Garfield	83.8	Pottawatomie	89.2
Garvin	84.1	Pushmataha	83.3
Grady	84.6	Roger Mills	92.2
Grant	95.3	Rogers	86.7
Greer	85.2	Seminole	89.9
Harmon	85.2	Sequoyah	82.9
Harper	----	Stephens	87.6
Haskell	83.3	Texas	84.0
Hughes	82.2	Tillman	86.7
Jackson	86.1	Tulsa	88.6
Jefferson	84.0	Wagoner	82.9
Johnston	81.0	Washington	84.7
Kay	90.5	Washita	87.3
Kingfisher	94.4	Woods	86.2
Kiowa	87.9	Woodward	91.7
Latimer	87.6		

[5]U. S. Bureau of the Census, County and City Data Book, 1956, p. 240.

TABLE XXXII

SCHOLASTIC ENROLLMENTS, GRADES NINE THROUGH TWELVE, BY COUNTY, FOR THE 1951-1952 SCHOOL YEAR[6]

County	Enrollment	County	Enrollment
Adair	817	LeFlore	1,991
Alfalfa	655	Lincoln	1,473
Atoka	835	Logan	1,323
Beaver	374	Love	490
Beckham	1,326	McClain	909
Blaine	1,076	McCurtain	1,777
Bryan	1,935	McIntosh	953
Caddo	2,212	Major	491
Canadian	1,247	Marshall	492
Carter	2,156	Mayes	1,127
Cherokee	908	Murray	646
Choctaw	1,107	Muskogee	3,430
Cimarron	258	Noble	765
Cleveland	1,565	Nowata	817
Coal	440	Okfuskee	1,035
Comanche	2,278	Oklahoma	15,856
Cotton	643	Okmulgee	2,313
Craig	958	Osage	1,577
Creek	2,427	Ottawa	1,725
Custer	1,358	Pawnee	770
Delaware	980	Payne	2,053
Dewey	682	Pittsburg	2,197
Ellis	406	Pontotoc	1,835
Garfield	2,285	Pottawatomie	2,691
Garvin	1,756	Pushmataha	737
Grady	2,071	Roger Mills	314
Grant	609	Rogers	1,228
Greer	991	Seminole	2,108
Harmon	486	Sequoyah	1,323
Harper	402	Stephens	2,120
Haskell	701	Texas	771
Hughes	1,345	Tillman	864
Jackson	1,108	Tulsa	11,468
Jefferson	792	Wagoner	925
Johnston	742	Washington	1,652
Kay	2,597	Washita	957
Kingfisher	824	Woods	763
Kiowa	1,219	Woodward	822
Latimer	482		

[6]Oklahoma State Department of Public Instruction, Twenty-Fourth Biennial Report (Oklahoma City, 1952). p. 322.

TABLE XXXIII

NUMBER OF CLASSROOM TEACHERS IN OKLAHOMA PUBLIC SCHOOLS, BY COUNTY, 1953-1954[7]

County	No. of Teachers	County	No. of Teachers
Adair	124.55	LeFlore	294.5
Alfalfa	94.55	Lincoln	191.5
Atoka	123.95	Logan	170.6
Beaver	72.0	Love	66.0
Beckham	174.7	McClain	121.6
Blaine	137.6	McCurtain	275.65
Bryan	223.82	McIntosh	149.2
Caddo	291.48	Major	71.5
Canadian	176.41	Marshall	58.0
Carter	304.3	Mayes	164.2
Cherokee	140.5	Murray	87.46
Choctaw	158.8	Muskogee	479.46
Cimarron	48.0	Noble	109.0
Cleveland	235.68	Nowata	113.0
Coal	64.0	Okfuskee	141.0
Comanche	384.65	Oklahoma	2,310.97
Cotton	86.0	Okmulgee	315.24
Craig	119.94	Osage	237.12
Creek	327.51	Ottawa	241.2
Custer	174.45	Pawnee	108.9
Delaware	122.45	Payne	266.55
Dewey	77.9	Pittsburg	333.95
Ellis	57.5	Pontotoc	227.15
Garfield	353.0	Pottawatomie	341.5
Garvin	250.58	Pushmataha	103.0
Grady	283.8	Roger Mills	42.6
Grant	102.0	Rogers	161.63
Greer	99.1	Seminole	267.91
Harmon	63.0	Sequoyah	185.7
Harper	54.5	Stephens	303.38
Haskell	100.5	Texas	144.9
Hughes	161.36	Tillman	143.45
Jackson	154.6	Tulsa	1,727.46
Jefferson	99.5	Wagoner	136.8
Johnston	101.3	Washington	252.4
Kay	376.76	Washita	124.62
Kingfisher	114.9	Woods	115.0
Kiowa	153.4	Woodward	104.13
Latimer	73.0		

[7]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report, p. 334.

TABLE XXXIV

TOTAL SALARIES PAID TO CLASSROOM TEACHERS, BY COUNTY, 1953-1954[8]

County	Salaries	County	Salaries
Adair	388,653	LeFlore	956,291
Alfalfa	317,459	Lincoln	621,425
Atoka	401,157	Logan	558,427
Beaver	226,284	Love	209,812
Beckham	575,843	McClain	396,402
Blaine	459,195	McCurtain	884,405
Bryan	739,240	McIntosh	473,977
Caddo	937,321	Major	229,806
Canadian	592,973	Marshall	191,444
Carter	997,547	Mayes	532,320
Cherokee	434,527	Murray	290,209
Choctaw	514,233	Muskogee	1,604,251
Cimarron	151,139	Noble	355,640
Cleveland	800,880	Nowata	369,042
Coal	198,399	Okfuskee	458,702
Comanche	1,277,457	Oklahoma	8,156,900
Cotton	278,248	Okmulgee	1,040,265
Craig	387,790	Osage	770,489
Creek	1,077,197	Ottawa	799,408
Custer	576,700	Pawnee	359,981
Delaware	393,135	Payne	913,497
Dewey	255,068	Pittsburg	1,071,630
Ellis	194,272	Pontotoc	734,786
Garfield	1,144,185	Pottawatomie	1,133,628
Garvin	812,548	Pushmataha	323,162
Grady	934,054	Roger Mills	131,777
Grant	342,442	Rogers	511,092
Greer	322,244	Seminole	886,511
Harmon	208,959	Sequoyah	571,220
Harper	171,079	Stephens	1,033,433
Haskell	321,320	Texas	476,408
Hughes	526,415	Tillman	460,600
Jackson	501,240	Tulsa	6,603,322
Jefferson	318,358	Wagoner	435,141
Johnston	322,448	Washington	853,245
Kay	1,354,865	Washita	402,205
Kingfisher	378,367	Woods	375,863
Kiowa	523,814	Woodward	345,175
Latimer			

[8]Ibid.

TABLE XXXV

TOTAL ENROLLMENT IN OKLAHOMA STATE SUPPORTED COLLEGES, BY COUNTY OF ORIGIN, 1955-1956[9]

County	Enrollment	County	Enrollment
Adair	196	LeFlore	299
Alfalfa	238	Lincoln	372
Atoka	151	Logan	322
Beaver	153	Love	69
Beckham	245	McClain	195
Blaine	215	McCurtain	349
Bryan	676	McIntosh	185
Caddo	446	Major	130
Canadian	270	Marshall	173
Carter	571	Mayes	195
Cherokee	386	Murray	185
Choctaw	210	Muskogee	853
Cimarron	83	Noble	202
Cleveland	1,125	Nowata	97
Coal	105	Okfuskee	181
Comanche	1,056	Oklahoma	5,157
Cotton	109	Okmulgee	597
Craig	187	Osage	341
Creek	402	Ottawa	520
Custer	519	Pawnee	148
Delaware	117	Payne	1,046
Dewey	154	Pittsburg	748
Ellis	82	Pontotoc	876
Garfield	561	Pottawatomie	475
Garvin	478	Pushmataha	157
Grady	683	Roger Mills	83
Grant	226	Rogers	217
Greer	158	Seminole	516
Harmon	125	Sequoyah	189
Harper	108	Stephens	445
Haskell	120	Texas	433
Hughes	251	Tillman	190
Jackson	279	Tulsa	1,999
Jefferson	124	Wagoner	133
Johnston	207	Washington	466
Kay	901	Washita	253
Kingfisher	216	Woods	376
Kiowa	308	Woodward	210
Latimer	232		

[9]Oklahoma State Regents for Higher Education, Eighth Biennial Report (Oklahoma City, 1956). p. 99.

TABLE XXXVI

AVERAGE NUMBER OF CARNEGIE UNITS OF ACCREDIATATION PER CHILD IN ADA, GRADES NINE THROUGH TWELVE, BY COUNTY, 1953-1954.[10]

County	Average Units	County	Average Units
Adair	33.0	LeFlore	31.9
Alfalfa	25.7	Lincoln	28.8
Atoka	25.1	Logan	33.2
Beaver	26.4	Love	22.5
Beckham	22.8	McClain	29.9
Blaine	27.0	McCurtain	30.0
Bryan	30.1	McIntosh	28.1
Caddo	31.6	Major	25.3
Canadian	46.6	Marshall	31.7
Carter	27.0	Mayes	36.4
Cherokee	42.3	Murray	29.2
Choctaw	30.3	Muskogee	47.4
Cimarron	25.7	Noble	31.7
Cleveland	40.3	Nowata	29.5
Coal	25.3	Okfuskee	30.7
Comanche	38.6	Oklahoma	64.6
Cotton	29.8	Okmulgee	33.0
Craig	29.4	Osage	28.9
Creek	37.7	Ottawa	35.7
Custer	37.3	Pawnee	33.3
Delaware	31.7	Payne	46.2
Dewey	25.5	Pittsburg	27.8
Ellis	26.8	Pontotoc	32.9
Garfield	43.2	Pottawatomie	41.5
Garvin	34.9	Pushmataha	25.6
Grady	34.9	Roger Mills	20.2
Grant	27.7	Rogers	31.3
Greer	25.4	Seminole	40.0
Harmon	27.6	Sequoyah	30.3
Harper	26.9	Stephens	38.8
Haskell	28.4	Texas	30.8
Hughes	29.0	Tillman	25.6
Jackson	26.9	Tulsa	58.4
Jefferson	26.1	Wagoner	29.6
Johnston	23.3	Washington	48.1
Kay	46.1	Washita	25.1
Kingfisher	25.8	Woods	34.7
Kiowa	30.0	Woodward	33.2
Latimer	28.5		

[10] Oklahoma State Department of Public Instruction, "Unpublished Records" (Oklahoma City, 1954).

TABLE XXXVII

TOTAL COMMON SCHOOL REVENUES FROM LOCAL SOURCES, BY COUNT FOR THE FISCAL YEAR 1953-1954[11]

County	Revenues	County	Revenues
Adair	116,906	LeFlore	371,273
Alfalfa	485,750	Lincoln	559,592
Atoka	183,713	Logan	578,137
Beaver	478,958	Love	154,477
Beckham	558,761	McClain	255,698
Blaine	476,140	McCurtain	283,621
Bryan	422,982	McIntosh	207,173
Caddo	692,672	Major	276,941
Canadian	600,216	Marshall	150,378
Carter	743,488	Mayes	279,314
Cherokee	140,960	Murray	301,589
Choctaw	208,278	Muskogee	1,107,628
Cimarron	281,089	Noble	553,086
Cleveland	590,468	Nowata	283,187
Coal	124,309	Okfuskee	346,915
Comanche	1,178,882	Oklahoma	9,988,240
Cotton	241,099	Okmulgee	739,377
Craig	372,199	Osage	1,003,926
Creek	835,578	Ottawa	626,292
Custer	593,793	Pawnee	273,405
Delaware	141,277	Payne	924,982
Dewey	250,038	Pittsburg	570,583
Ellis	256,217	Pontotoc	567,529
Garfield	1,677,706	Pottawatomie	759,105
Garvin	677,728	Pushmataha	169,698
Grady	842,731	Roger Mills	152,782
Grant	539,989	Rogers	389,025
Greer	238,377	Seminole	633,816
Harmon	154,613	Sequoyah	203,303
Harper	247,715	Stephens	779,391
Haskell	125,535	Texas	1,009,632
Hughes	388,340	Tillman	462,984
Jackson	394,243	Tulsa	9,696,974
Jefferson	242,950	Wagoner	226,409
Johnston	171,019	Washington	1,137,424
Kay	1,752,754	Washita	394,039
Kingfisher	584,720	Woods	542,406
Kiowa	501,618	Woodward	454,502
Latimer	104,904		

[11]Oklahoma State Department of Public Instruction, Twenty-Fifth Biennial Report, p. 293.

VITA

Delbert Leroy Rutledge

Candidate for the Degree of

Doctor of Education

Thesis: A STUDY OF THE RELATIONSHIP BETWEEN EDUCATIONAL OPPORTUNITY AND ECONOMIC WELL-BEING IN THE COUNTIES OF OKLAHOMA

Major Field: Higher Education

Biographical:

Personal data: Born in Woodward County, Oklahoma, July 20, 1925, son of Thomas Henry and Tena Clementine Rutledge.

Education: Attended grade school in the rural schools of Woodward County; graduated from Ft. Supply High School in 1942; received the Bachelor of Science degree from the University of New Mexico, with a major in mathematics, in May, 1946; received the Master of Science degree from the Oklahoma State University, with a major in secondary education, in July, 1948; completed the requirements for the Doctor of Education degree in May, 1958.

Professional experience: Entered the United States Navy in 1943 serving on active duty until 1946 and is presently commissioned in the Naval Reserve; taught mathematics in the secondary schools of Rush Springs, Oklahoma, and Edmond, Oklahoma, in 1947 and 1948; served as Assistant Professor of Physics and Director of Photographic Services at Central State College, Edmond, Oklahoma, for nine years; presently serving as Assistant Professor of Physics, Oklahoma State University.